SUPREME COURT OF THE UNITED STATES

October Term, 1941

No. [redacted]

SAMUEL HUNTER WOODBRIDGE AND EDWARD WOODBRIDGE BATEMAN, EXECUTORS OF WILLIAM E. WOODBRIDGE, DECEASED, APPELLANTS

vs.

THE UNITED STATES

APPEAL FROM THE COURT OF CLAIMS

Filed [redacted], 1941

(See [redacted])

(28,968)

SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1922.

No. 418.

SAMUEL HOMER WOODBRIDGE AND EDWARD WOODBRIDGE BARNES, EXECUTORS OF WILLIAM E. WOODBRIDGE, DECEASED, APPELLANTS,

vs.

THE UNITED STATES.

APPEAL FROM THE COURT OF CLAIMS.

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1 **Court of Claims.**

No. 22504.

SAMUEL HOMER WOODBRIDGE and EDWARD WOODBRIDGE BARNES, Executors of William E. Woodbridge, Deceased,

vs.

THE UNITED STATES.

I. History of Proceedings.

The original petition in this case, which was brought in the name of William E. Woodbridge, was filed in this office on March 7, 1901 by R. R. McMahon, Esq. as attorney of record.

On November 22, 1904, Samuel Homer Woodbridge and Edward Woodbridge Barnes, Executors of William E. Woodbridge, deceased, were substituted as claimants, on motion made therefor suggesting the death of William E. Woodbridge.

On january 26, 1910, by leave of court, the said executors filed an amended petition. Said amended petition is as follows:

2 **II. Amended Petition.**

(Filed Jan. 26, 1910.)

To the Honorable the Court of Claims:

Your petitioners, Samuel Homer Woodbridge, a citizen of Boston, in the State of Massachusetts, and Edward Woodbridge Barnes, a citizen of Perth Amboy, in the State of New Jersey, the duly appointed executors of William E. Woodbridge, deceased, respectfully represent:

1. That, as shown by the original petition of your petitioners' decedent, filed March 7, 1901, this action has been brought by authority of the following Act of Congress:

"An act referring to the Court of Claims the claim of William E. Woodbridge for compensation for the use by the United States of his invention relating to projectiles, for which letters patent were ordered to issue to him March twenty-fifth, eighteen hundred and fifty-two.

"Be it enacted by the Senate and House of Representatives of the United States of America, in Congress assembled, that the claim of William E. Woodbridge for compensation for the use of his alleged invention relating to projectiles for rifled cannon, for which letters patent were ordered to issue March twenty-fifth, eighteen hundred and fifty-two, by the United States Government, be, and the
3 same is hereby referred to the Court of Claims of the United States, which court is hereby vested with jurisdiction in the

premises, and whose duty it shall be to hear and determine, according to its usual rules of procedure—

"First. Whether the said Woodbridge was the original and first inventor of the said invention and entitled to a patent therefor.

"Second. To what extent the said invention has been used by the United States Government, and what amount of compensation, if any, the said Woodbridge ought to receive, in equity and justice, from the United States Government for the past use of said invention. And in considering and determining the compensation to be made, if any, the said court shall, if it find that the said Woodbridge was the first and original inventor of said invention and entitled to a patent at the time of its order to issue, namely, March twenty-fifth, eighteen hundred and fifty-two, proceed and be guided in all respects as though the aforesaid letters patent had been actually issued for the term of seventeen years from the date of the aforesaid order to issue; the court to render judgment, irrespective of lapse of time, in favor of the claimant with the same effect, including right of appeal, as judgments generally of said court: Provided, however, That the said court shall first be satisfied that the said Woodbridge did not forfeit, or abandon, his right to a patent, by publication delay, laches, or otherwise; and that the said patent was wrongfully refused to be issued by the Patent Office."

"Approved March 2, 1901."

2. That prior to the 11th day of February, 1852, the decedent, William E. Woodbridge, a citizen of the United States, and a resident of Perth Amboy, in the State of New Jersey, was, as your petitioners are informed and believe, and therefore allege, the original and sole inventor of a certain new and useful improvement in rifled ordnance not known or used by others in this country before his discovery or invention thereof, and not, at the time of his application for a patent, in public use or one sale with his consent or allowance as the inventor or discoverer, and not patented or described in any printed publication in this or any foreign country prior to his invention thereof.

3. That thereupon, on the 11th day of February, 1852, the said decedent, William E. Woodbridge, duly and regularly filed in the Patent Office of the United States an application for the issu-
4 ance to him of letters patent for the said new and useful improvement in rifled ordnance, which said application comprised a petition for the issue of said letters patent, and a written description of his invention or discovery, together with drawings illustrating the invention, a model representing said invention, the prescribed oath, and the fee required by the Act of Congress in that case made and provided.

4. After proceedings duly and regularly had been taken upon said application, a patent was allowed and ordered to be issued on the 25th day of March, 1852, of which action the applicant was informed by the following communication from the Commissioner of Patents:

"U. S. Patent Office, April 15th, 1852.

"SIR: Your favor of the 13th inst. is received. Your application for Letters Patent for Rifled Ordnance has been examined and on

the 25th ult. a patent was ordered to issue thereon; and in accordance with your request the papers were filed among the secret archives of the office, subject to your directions as to the time of issuing the same. Yours respectfully, Thos. Ewbank. W. E. Woodbridge, Perth Amboy, N. J."

5. The applicant's request of April 13, 1852, referred to by the Commissioner was, that in accordance with the custom of the Patent Office then prevailing, the patent should be placed in the secret archives of the office, adding that if it was necessary to specify a particular time during which the patent might remain in the secret archives, one year should be designated as the time specified by applicant. Prior to his letter of April 13, 1852, the applicant under date of March 23, 1852, had thus written to the Commissioner of Patents:

"I was informed, in answer to my inquiry, that upon the issue, or order to issue, of a patent, it may be filed in the secret archives of your office (at the risk of the patentee) for such time as he may desire. I wish to avail myself of this privilege when my patent may issue, in order that my ability to take out a patent in a foreign country may not be affected by the publication of the invention. If it is necessary to specify a particular time during which the patent shall remain in the secret archives, you will please consider one year as the time designated by me. Very respectfully, W. E. Woodbridge."

6. The decedent, desiring to prevent the anticipation of a foreign patent by the issue of the United States patent, and desiring to avoid the waste of the life of his patent before the adoption of the invention, and not being under any obligation, legal or otherwise, to call for his patent, permitted the same to remain in the custody of the Patent Office until December 31, 1861.

7. December 31, 1861, decedent addressed a communication to the Commissioner of Patents, stating that he wished, if compatible with the rules of the Patent Office, to make certain amendments to his specifications; but if not permissible, he desired an immediate issuance of his patent. The letter of Woodbridge is as follows:

"Little Falls, N. Y., Dec. 31st, 1861.

"To the Hon. Commissioner of Patents:

"SIR: In the year 1850 I put in use at Fort Monroe an invention for giving the 'rifled motion' to cannon projectiles, and in March, 1852, made application for a patent.

"After making some modifications of the claims (and possibly of the specification, I am not certain), at the suggestion of the office, the application was granted, the patent 'ordered to issue' and filed in the secret archives of the office. I have allowed it to remain until the present time, it being only lately that any immediate opportunity of rendering it pecuniarily available has occurred.

"The principal idea of the invention was the application of an extensible ring of metal to a tapering part of a projectile in the rear of its greatest diameter, so that the ring might be made to enlarge

its diameter by stretching under the action of the powder, at the same time clasping the ball, filling the bore of the gun and taking hold of the grooves. The specification as it is makes no special invention, I believe, of using the ring described without projections in a rifled gun (which was not supposed to be most advantageous in cannon), but it specially states that I proposed to use such a ring in smooth-bored guns where its office was to save loss of force
6 of the powder and give the ball its motion in the direct line of the axis of the bore (that is, avoiding the bounding of the shot from side to side in the gun, which of course interferes with its accuracy of firing). The first claim, according to a hastily drawn copy made by me is in these words: 'I claim first the construction of an extensible ring or sabot as above described to be placed on (or "in") the rear of the projectile for the purpose of diminishing the windage and giving the ball its motion in the axis of the bore.'

"It was supposed that this claim would include every case in which the ring performed the offices then mentioned (as it seems now that it ought); but in order that the idea may be more fully embodied in the claim, I desire to have it modified by the addition of the words 'whether the hinder part of the ring be grooved or not, and without regard to the form of the bore.'

"I may here mention that I first used the ring without the groove spoken of—which is considered desirable rather than necessary—and that I also used, in an ordinary rifle, the ring without the projections to fit the grooves.

"It was also a part of the original invention (as may be found by reference to the report of the experiments made with my rifled gun at Fort Monroe in 1850, on file at the Ordnance Department), to attach the ring to the shot or shell by casting it upon it, having the grooves made in the shell in such a way as to attach to the ring and prevent its rotation on the shell, while still it was allowed to be driven forward upon it by the action of the powder.

"I am fully of opinion that all I have described originated in my invention, and desire to amend the specification so as to include the whole.

"Whether I may do this or not is, I suppose, a matter of discretion with yourself. Please advise me what may be done in this case. Very respectfully, your ob't svt., W. E. Woodbridge.

"P. S.—Should you be unable to grant either of the emendations desired, please issue the patent immediately. Your ob't svt., W. E. Woodbridge."

8. In answer to said letter, the Commissioner informed decedent that in accordance with his request, his patent would be
7 ordered to issue. This information was conveyed in the following letter:

"U. S. Patent Office,
"Washington, Jany. 4th, 1862.

SIR: In reply to your communication of the 31st ult., I have to say your patent will be ordered to issue in pursuance of your request. The defects in your specification can only be cured by a reissue, as you will see by the accompanying Rules. Respectfully, Your obdnt.

Servt., D. P. Holloway, Commissioner. W. E. Woodbridge, Esq., Little Falls, New York."

9. From the date of Commissioner Ewbank's letter of April 15, 1852, to William E. Woodbridge, informing him that a patent had been ordered to issue on his application, up to December 31, 1861, the time Woodbridge applied for delivery of his patent, said Woodbridge had not received any communication from the Patent Office or from any other source in relation to the delivery of his patent.

10. Subsequent to the letter of Commissioner Holloway, dated January 4, 1862, informing Woodbridge that his patent would be issued in accordance with his request of December 31, 1861, Woodbridge received from the Patent Office a communication dated January 29, 1862, notifying him that his request for the issue of his patent was denied on the ground of abandonment of his application for a patent. This said communication purported to be an answer to Woodbridge's letter of December 31, 1861, making no reference whatever to the Commissioner's action, as conveyed in his letter of January 4, 1862, granting Woodbridge's request for the issue of his patent.

11. Upon the receipt of said communication of January 29, 1862, Woodbridge acknowledged the receipt thereof, as well as the receipt of the prior letter of January 4, 1862, and filed his protest against the action set forth in the letter of January 29, and renewed
8 his request for the delivery of his patent which had been ordered to issue by Commissioner Ewbank.

12. April 16, 1862, he again protested to the Commissioner against the jurisdiction taken by the office January 29, 1862, in reviewing the action of the previous Commissioner in ordering his patent to issue, and at the same time, in compliance with the line of appeal imposed upon him by the Patent Office, he filed his appeal with the board of examiners-in-chief.

13. Woodbridge's appeal and protests were unavailing, and the issue of the patent was again refused in the following communication from the Patent Office:

"United States Patent Office.

"July 15, 1862.

"SIR: Your application for a patent for improvement in projectiles has been considered by the examiners in chief upon appeal, and they affirm the former action of the office, and decide that the application should be refused. Respectfully, &c., —— ——, Commissioner of Patents. G. H. C. No. 1. W. E. Woodbridge, Perth Amboy, Middlesex Co., N. J."

14. Thereafter your petitioners' decedent consulted with successive Commissioners of Patents with a view of having the order to issue his patent reinstated, and ascertained that they would not disturb the previous action of the office withholding the patent.

15. Subsequently, to-wit, in the years 1871 and 1879, the decedent made further endeavors to have the Patent Office enforce Commissioner Ewbank's order of March 25, 1852, and the action of Commissioner Holloway as communicated to decedent in said Commis-

sioner's letter of January 4, 1862, and was informed that the action of the office in refusing to issue the patent would not be disturbed.

16. Failing to secure favorable action at the Patent Office, the decedent appealed to Congress in 1884, and after many favor-
9 able and unanimous reports by committees, Congress passed the Act hereinbefore set forth.

17. During the periods from March 25, 1852, to March 25, 1869, the United States made, used, or caused to be made or used, various projectiles for ordnance containing and embodying the invention of Woodbridge as set forth in his application on which a patent was ordered to issue, or material and substantial parts of said invention. The said projectiles were commonly known under and by the following names or designation: Sawyer, Hotchkiss, Cochran, James, Parrott, Stafford, Absterdam, Dyer, Eureka, Dana and Dahlgren.

Your petitioners further show that decedent was entitled to the amounts representing the advantage which accrued to the United States by reason of the use of said decedent's invention of the projectiles named, viz:

Army Projectiles.

Name.	Number.	Weight.	Cost.
Sawyer	25,630	482,660	$82,255.50
Hotchkiss	965,825	10,110,729	1,374,415.45
James	94,046	3,808,789	390,524.92
Parrott	1,248,736	36,305,712	3,057,464.40
Stafford	100	1,300	160.00
Absterdam	60,766	931,904	143,737.00
Dyer	148,035	3,658,366	239,083.39
Eureka	5,000	47,000	7,850.00
Dana	70	12,600	1,140.15
Total	2,448,208	55,359,160	$5,296,630.81

Navy Projectiles.

Name.	Number.	Weight.	Estimate cost.
Sawyer	732	14,580	$2,587.72
Cochran	100	1,100	325.00
Stafford	2,600	124,850	11,317.60
Hotchkiss	61,168	1,146,538	79,253.78
Parrott	270,697	13,891,922	1,039,937.43
Dahlgren	56,256	1,285,363	165,926.56
Total	391,553	16,463,353	1,299,348.09

10 19. Your petitioners state that in the foregoing table of Navy projectiles they are unable to give the exact cost of the projectiles therein enumerated, request therefor having been duly made of the Navy Department, and the Department having reported to the court its inability to furnish said information; and your petitioners further state that said estimated cost is, to the best of their

knowledge and belief, a fair and approximately correct estimate of said cost and is based on the number of projectiles having metallic expanding bands purchased by the Navy Department between March 25, 1852, and March 25, 1869, as set forth in the Navy Department report of February 8, 1882, and on the estimated cost per projectile as determined from the average price per projectile for similar projectiles of corresponding weights by the War Department during said period, said average price per projectile being derived from the report of the War Department dated September 8, 1906, containing a list of the kind, number and cost of projectiles purchased by the War Department, and your petitioners set forth below the estimated price paid for the Navy projectiles and the basis for such estimate:

Kind.	Est. price per proj.	Basis for estimate.
Sawyer 12 pdr.....	$3.25	Price per Army Sawyer 12 pdr. projectile.
Sawyer 30 pdr.....	$2.04	Price per Army Parrott 30 pdr. projectile.
Sawyer 50 pdr.....	$5.26	Price per Army Sawyer 50 pdr. case projectile.
Cochran 12 pdr....	$3.25	Price per Army Sawyer 12 pdr. projectile.
Stafford 30 pdr....	$2.04	Price per Army Parrott 30 pdr. projectile.
Stafford 50 pdr....	$5.26	Price per Army Sawyer 50 pdr. case projectile.
Stafford 100 pdr...	$6.36	Price per Army Parrott 100 pdr. projectile.
11		
Stafford 150 pdr...	$10.80	¾ of price per Army Parrott 200 pdr. projectile.
Hotchkiss 12 pdr...	$2.96	Average of price per Army James 12 pdr. shell and Army Sawyer 12 pdr. shell.
Hotchkiss 20 pdr..	$1.26	Price per Army Parrott 20 pdr. shell.
Hotchkiss 30 pdr..	$2.04	Price par Army Parrott 30 pdr. shell.
Hotchkiss 50 pdr..	$5.26	Price per Army Sawyer 50 pdr. case projectile.
Parrott 10 pdr.....	$.74	Price per Army Parrott 20 pdr. shell.
Parrott 20 pdr.....	$1.26	Price per Army Parrott 30 pdr. shell.
Parrott 30 pdr.....	$2.04	Price per Army Parrott 30 pdr. shell.
Parrott 100 pdr....	$6.36	Price per Army Parrott 100 pdr. shell.
Parrott 150 pdr....	$9.24	¾ of price paid for Army Parrott 200 pdr.
Dahlgren 12 pdr...	$2.96	Estimate price for Hotchkiss 12 pdr.
Dahlgren 20 pdr...	$1.26	Price per Army Parrott 20 pdr. shell.
Dahlgren 30 pdr...	$2.04	Price per Army Parrott 30 pdr.
Dahlgren 50 pdr...	$5.26	Price per Army Sawyer 50 pdr. case shot.
Dahlgren 80 pdr...	$5.09	8/10 of price per Army Parrott 100 pdr. shell.

20. Your petitioners state that the decedent's invention was the first successful and practical invention for giving the rifle motion to projectiles for ordnance and for closing the bore of the gun
12 against windage; that it was of very great value to the Government; that its use as embodied in the various projectiles above enumerated was a necessary and indispensable factor in the successful prosecution of the civil war; and therefore your petitioners believe and allege that the value of said invention to the United States Government was at least thirty-three and one-third per cent (33 1-3%) of the price paid for the above-named projectiles. Wherefore your petitioners claim that in equity and justice they should receive as compensation an amount equal to said percentage.

21. Your petitioners further represent that no action upon this claim has been had either in Congress or before any of the departments, other than as above set forth; that no assignment or transfer of said claim or of any part thereof or interest therein has been made; that petitioners are justly entitled to the amount herein claimed from the United States after allowing all just credits and offsets; that petitioners and their decedent, being citizens of the United States, have at all times borne true allegiance to the Government of the United States and have not in any way voluntarily aided, abetted, or given encouragement to rebellion against the said Government; that a duly authenticated copy of their appointment as executors of William E. Woodbridge, deceased, was filed in this court November 22, 1904, when they were admitted to prosecute this suit; that they believe the facts set forth in this petition to be true.

Wherefore your petitioners pray the Court that a judgment be rendered in their favor for the sum of two million one hundred and ninety-eight thousand six hundred and fifty-nine dollars and sixty-three cents ($2,198,659.63). Samuel Homer Woodbridge, Edward Woodbridge Barnes, Executors of William E. Woodbridge, Deceased, Petitioners. Richd. R. McMahon, Attorney of Record. H. P. Doolittle, Chas. J. Faulkner, Herbert & Micou, Henry B. F. MacFarland, of Counsel.

13 STATE OF MASSACHUSETTS,
County of Suffolk, ss:

Before me a Notary Public in and for the County of Suffolk aforesaid, personally came Samuel Homer Woodbridge, who, being duly sworn, says that he has fully read the foregoing petition by him subscribed and knows the contents thereof and that the facts therein stated upon his personal knowledge are true, and those stated upon information and belief he believes to be true.

Sworn to and subscribed before me this tenth day of January, 1910. Walter Humphreys, Notary Public. [Seal.]

STATE OF NEW YORK,
County of New York, ss:

Before me a Notary Public in and for the County of New York aforesaid, personally came Edward Woodbridge Barnes, who, being duly sworn, says that he has fully read the foregoing petition by him subscribed and knows the contents thereof and that the facts therein stated upon his personal knowledge are true, and those stated upon information and belief he believes to be true.

Sworn to and subscribed before me, this twenty-fourth day of January, 1910. Robert Westaway, Notary Public Kings County. [Seal.] Certificate filed New York County.

14 **III. History of Further Proceedings.**

On January 11, 1917, on motion made therefor, H. P. Doolittle, Esq. was substituted as attorney of record by the court "without prejudice to any lien or interest of the former attorney."

On April 9 and 10, 1918, the case was argued and submitted by Messrs. H. P. Doolittle and R. R. McMahon, for the claimants, and by Mr. W. D. Eakin, for the defendant.

On December 8, 1918, the court filed tentative findings of fact and allowed both sides ninety (90) days in which to file objections thereto.

On March 1, 1919, the claimants filed exceptions to said tentative findings, and on the same date the defendant likewise filed a motion for amendment of said findings.

IV. Argument and Submission of Case on Tentative Findings.

On December 18, 1919, this case was argued and submitted on tentative findings by Mr. Henry P. Doolittle, for the claimants, and by Mr. W. D. Eakim, for the defendant.

15 **V. Findings of Fact, Conclusion of Law, and Opinion of the Court by Booth, J.**

Entered March 22, 1920.

This case having been heard by the Court of Claims, the court, upon the evidence, makes the following

Findings of Fact.

I.

On or about February 11, 1852, the plaintiffs' decedent, William E. Woodbridge, filed in the United States Patent Office an application for letters patent for an improvement in rifled ordnance, said application being accompanied by the fee required by law for the granting of a patent.

The specification of said application was as follows:

"To all whom it may concern:

"Be it known that I, William E. Woodbridge, of the city of Perth Amboy, county of Middlesex, and State of New Jersey, have invented a new and useful improvement in rifled ordnance, and that the following is a full and exact description of the same, reference being had to the accompanying drawings:

"The nature of my invention consists in applying to a projectile to be fired from a rifled gun a rifle-ring, or sabot, in the manner hereinafter described, for the purpose of giving to the projectile the rifle motion.

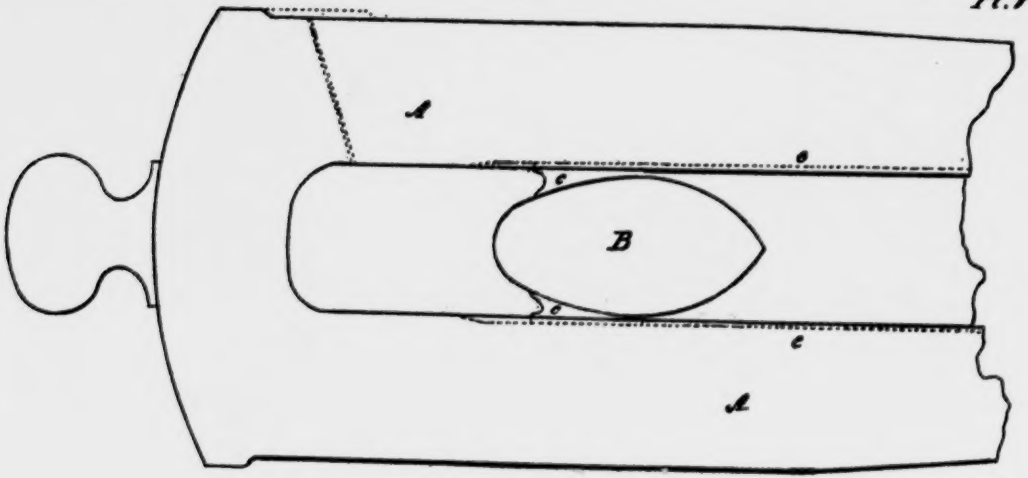
"In the accompanying drawings, fig. 1st represents a section of the cannon through its axis, with the ball and rifle ring, or sabot, in position; A being the cannon, B the ball, and c the rifle ring, or sabot. The dotted line *d* represents the position of the trunnions.

"The cannon, which is represented in transverse section at fig. 2, has a rifled bore, the grooves being represented at *e, e*. The dotted lines *ee*, fig. 1st, also indicate the depth of the grooves. The projectile, which is ovoid in form, pointed at the forward end, is represented at B, fig. 1st, and at fig. 3d (enlarged). The rifle
16 ring, or sabot, is represented separately (enlarged) at fig. 4, a section through its axis; at fig. 5, a view of the forward end, and at fig. 6, a view of the rear end. It is a ring of metal, softer than the ball or cannon, and capable of extension without rupture, whose exterior surface has the form of the bore, but sufficiently smaller to allow it to be readily introduced into the gun; and the inner surface of which fits the surface of the ball in the rear of its greatest diameter. Its rear end is grooved, as shown in the section (fig. 4), in order that the thin portions may act valvularly to prevent the escape of the gases between it and the sides of the bore and projectile.

"A suitable charge of powder is to be introduced into the gun, and the ball and rifle ring placed in the position represented in fig. 1, the rear of the ball being in contact with the charge of powder. The surface of the rifle ring exposed to the action of the gases formed by the inflammation of the powder being much greater, in proportion to its inertia, than that of the ball, the ring is driven forcibly forward upon the ball so as to embrace it tightly, and thus impart the rifle motion which itself has received from the grooves of the gun; and at the same time it is stretched to fill the bore of the gun completely, thus destroying the windage and causing the ball to advance strictly in the line of the axis of the bore. The length of the rifle ring (its measurment in the direction of its axis), in proportion to its diameter, depends upon the stiffness of the metal of which it is formed, the form and weight of the projectile, and the proportionate charge of powder. The proportions represented in the drawings may be considered proper for a rifle ring made of an alloy of 2 parts zinc and 1 part tin, and a charge of powder equal to one-eighth or one-fifth the ball in weight.

"I also propose to use a similar ring or sabot (but without the

Pl. 1



Section of Gun through Axis.

A. Gun. B. Projectile. c. Sabot.

17

Pl. 2.

Fig. 2.

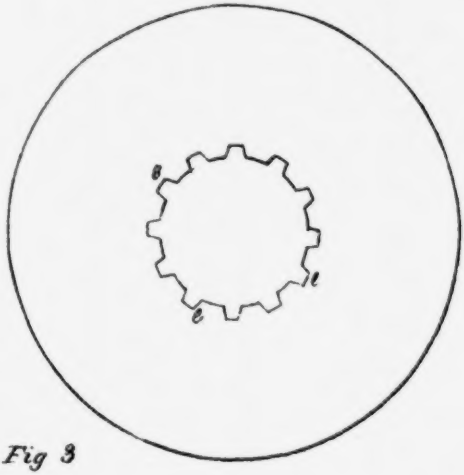


Fig 3

Fig 4

Fig 5

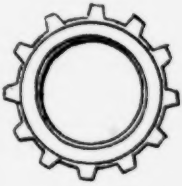


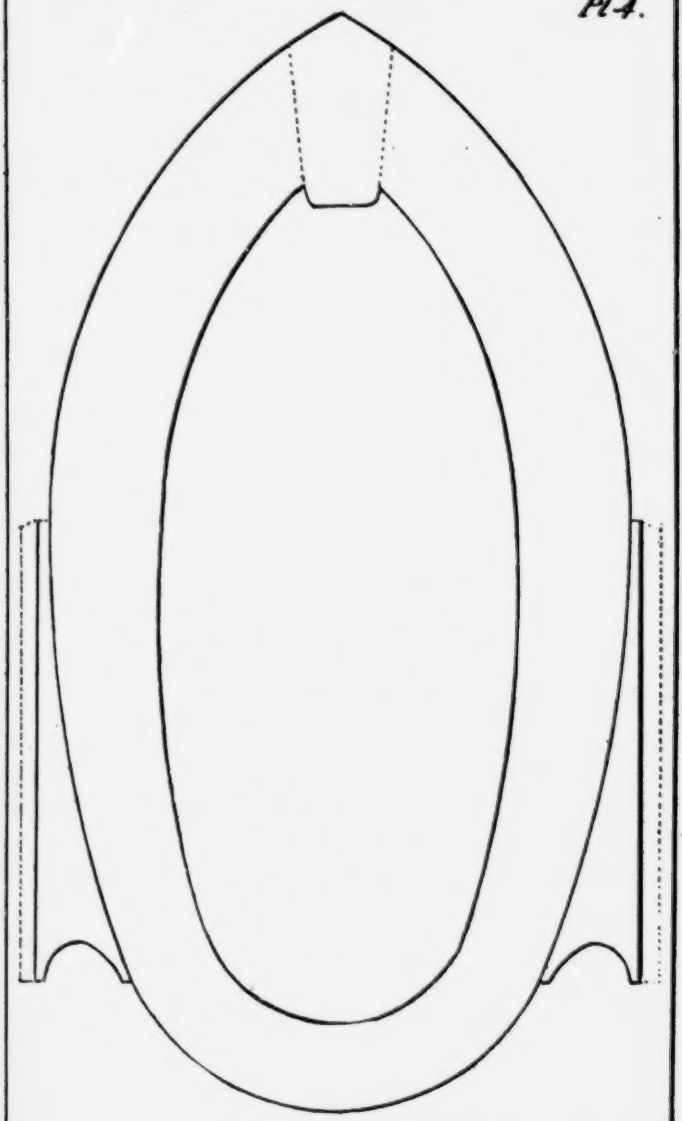
Fig. 2. Transverse Section of Gun

Fig. 3. Projectile

Fig. 4. Section of Sabot

Fig. 5. End view of Sabot

Pl 4.



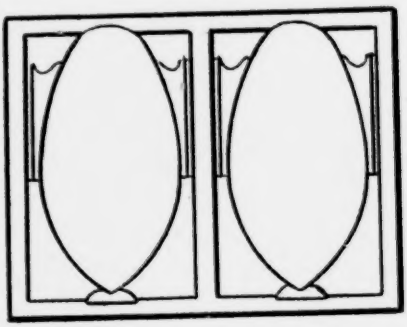
Shell with Sabot for 6 pd. calibre.

Pl. 3.

Fig. 6.

Sabot after firing.

Fig. 7.



Shells boxed for transportation.

projections for the grooves of the gun) for spherical or other shot in smooth-bore guns, for avoiding the loss of force by windage, and for giving the ball its motion in the direction of the axis of the bore of the gun.

"What I claim as my invention and desire to secure by letters patent is the application for rifle ring or sabot, constructed substantially as herein described, to the rear of a projectile for the purpose of communicating to it the rifle motion, without restricting myself to the particular proportions or material mentioned in the description.

"I also claim the use of a similar ring of extensible metal in smooth-bored guns, as set forth in the foregoing specification."

Said specification was illustrated by a set of drawings filed therewith, a perfect copy of which is not now obtainable, but of which the following drawings are a substantial copy:

(Here follow plates 1, 2, 4, 3, marked pages 17, 18, 19, 20.)

21 On February 16, 1852, the Patent Office wrote the applicant, Woodbridge, as follows:

"Your claims to letters patent for alleged improve'ts in rifle balls have been examined and are found to present nothing new or patentable. Sabots or rings of soft metal applied to iron balls are well known for either smoothbore or rifled guns. See page 189, Artizan for 1846, where the shot is of cast iron, and a wooden or leaden ring is made to take into the grooves of the rifle bore. See also a rejected appli'n for a similar invention filed by Francis Mayer in 1851. For letters of withdrawal see enclosed circular."

On February 23, 1852, Woodbridge replied by letter to the Commissioner of Patents, as follows:

"Your letter of the 16th inst., stating that my 'claims to letters patent for alleged improvements in rifle balls have been examined and found to present nothing new or patentable,' came duly to hand. In that communication you refer to the Artizan and to the rejected application of Francis Mayer in 1851. Though anxious to lose no time, I was unable to refer to the Artizan until last Saturday; and have supposed it unnecessary to consider the latter reference, as it bears later date than my experiments at Fort Monroe, the records of which I suppose are sufficient to show my priority of invention should there be an interference. If, however, your judgment should require a consideration of that application, I would thank you, sir, to forward me on such terms as the law prescribes, and as early as convenient, so much of its description as may be necessary for me to be acquainted with.

"I have given the article referred to in the Artizan careful attention; but find nothing in the descriptions of shot there presented which I have intended to claim as my invention. The shot represented at fig. 2 is the only one of those there figured which can by possibility be considered as having analogy to what I have described in my specification, being the only one in which there is a ring wad

or anything approaching thereto, and the concluding sentence of the paragraph, referred the 'sugar-loaf' shot of the Messrs. Lancaster, contains the only mention of a leaden ring.

"I beg your careful attention to the following points as the distinguishing characteristics of the rifle ring or sabot which I have claimed as my invention.

"1st. It is necessarily a ring capable of extension without rupture.

"2d. It grasps the ball, not in consequence of being attached thereto before its insertion into the gun, but by being driven forcibly forward upon an enlarged part of the projectile, by the explosion of the powder within the gun, the practical value of which arrangement is that the ring fully retains its grasp on the ball, though the ball does not fully take the rifle motion at the first instant of its progression. Experiments have fully shown that leaden bands can not be made to give the rifle motion to balls of any considerable weight, however strongly attached.

"3d. As a necessary result of the stretching of the ring, as above spoken of, it is expanded so as completely to fill the bore of the gun, giving greater accuracy to the coincidence of the motion of the ball with the axis of the bore than would otherwise be obtained.

22 "4th. The valvular portions are important parts of the rifle ring. If the gases are allowed to enter the space between the ring and the ball, the ring is not pressed against the ball so as to grasp it as required, or stretch it against the sides of the bore; if the gases escape between the rifle ring and the sides of the bore, the ring is rapidly abraded by the current of heated gases.

"None of these characteristics are indicated, as I am aware, in the article referred to, and it was my intention to claim nothing else in my specification.

"May I further request that you would favor me with a copy of the patent laws now in force?"

On March 19, 1852, the Patent Office wrote Woodbridge as follows:

"Your letter of 23d ult. and the arguments which it contains have been considered in their turn, and the specifi'n is herewith returned for amendment. It is believed that claims substantially similar to those set forth in pencil illustrate your invention, and that if they be presented they may be allowed.

"The drawing is also returned; a duplicate will be required. The patent laws which you desire are herewith returned, together with a circular of 'information' for persons having business with this office.

[*Penciled Memorandum Referred to in Above Letter of March 19, 1852.*]

"What I claim as my invention and desire to secure by letters is—

"1st. The construction of an extensible metallic ring or sabot as above described and placed in the rear of the projectile, for the purpose of—and gives the ball its motion in the direction of the axis —bore.

"2d. A metallic ring similarly formed and placed and furnished with projections as described in combination with a rifle-bored gun, for the purpose of communicating the rifle motion to the — as — set forth."

On March 23, 1852, Woodbridge wrote the Commissioner of Patents as follows, the amendment of the specification being accompanied by the required supplemental oath:

"I return herewith my specification, amended, as I suppose, according to your desire, and also the necessary duplicate drawings.

I was informed, in answer to my inquiry, that upon the issue, or order to issue, of a patent, it may be filed in the secret archives of your office (at the risk of the patentee) for such time as he may desire. I wish to avail myself of this privilege when my patent may issue, in order that my ability to take out a patent in a foreign country may not be affected by the publication of the invention. If it is necessary to specify a particular time during which the patent shall remain in the secret archives, you will please consider one year as the time designated by me.

[*Amended Final Page of Application, Referred to in Preceding Letter.*]

bore. The length of the rifle-ring (its measurement in the direction of its axis), in proportion to its diameter, depends upon the stiffness of the metal of which it is formed, the form and weight of the projectile, and the proportionate charge of powder. The proportions represented in the drawings may be considered proper for a rifle ring made of an alloy of 2 parts zinc and 1 part tin and a charge of powder equal to one-eighth or one-fifth the ball in weight.

23 "I also propose to use a similar ring or sabot (but without the projections for the grooves of the gun) for spherical or other shot in smooth-bored guns, for avoiding the loss of force by windage, and for giving the ball its motion in the direction of the axis of the bore of the gun.

"What I claim as my invention and desire to secure by letters patent is—

"First. The construction of an extensible metallic ring or sabot as above described and placed in the rear of the projectile, for the purpose of diminishing the windage and giving the ball its motion in the direction of the axis of the bore; and,

"Second. A metallic ring similarly formed and placed, and furnished with projections as described, in combination with a rifle-bored gun, for the purpose of communicating the rifle motion in manner substantially as herein set forth."

On April 15, 1852, the Patent Office wrote Woodbridge as follows:

"Your favor of the 13th inst. is received. Your application for letters patent for rifle ordnance has been examined and on the 25th ult. a patent was ordered to issue thereon, and in accordance with your request, the papers were filed among the secret archives of the office, subject to your directions as to the time of issuing the same."

Said papers were filed among the secret archives of the Patent Office by the Patent Office authorities, as stated by said letter.

III.

No further action was taken either by said Woodbridge or by the Patent Office in the matter of said application for patent until December 31, 1861, upon which date Woodbridge wrote the Commissioner of Patents as follows:

"In the year 1850 I put in use at Fort Monroe an invention for giving the 'rifle motion' to cannon projectiles, and in March, 1852, made application for a patent.

"After making some modifications of the claims (and possibly of the specifications, I am not certain), at the suggestion of the office, the application was granted, the patent 'order to issue' and filed in the secret archives of the office. I have allowed it to remain until the present time, it being only lately that any immediate opportunity of rendering it pecuniarily available has occurred.

"The principal idea of the invention was the application of an extensible ring of metal to a tapering part of a projectile in the rear of its greatest diameter, so that the ring might be made to enlarge its diameter by stretching under the action of the powder, at the same time clasping the ball, filling the bore of the gun and taking hold of the grooves. The specification as it is makes no special invention, I believe, of using the ring described without projections in a rifled gun (which was not supposed to be most advantageous in cannon), but it specially states that I proposed to use such a ring in smooth-bored guns where its office was to save loss of force of the powder and give the ball its motion in the direct line of the axis of the bore (that is, avoiding the bounding of the shot from side to side in the gun, which of course interferes with its accuracy of firing). The first claim, according to a hastily drawn copy made by me in these words: 'I claim first the construction of an extensible
24 ring or sabot as above described to be placed on (or "in") the rear of the projectile for the purpose of diminishing the windage and giving the ball its motion in the axis of the bore.'

"It was supposed that this claim would include every case in which the ring performed the offices then mentioned (as it seems now that it ought); but in order that the idea may be more fully embodied in the claim, I desire to have it modified by the addition of the words 'whether the hinder part of the ring be grooved or not, and without regard to the form of the bore.'

"I may here mention that I first used the ring without the groove spoken of—which is considered desirable rather than necessary—and that I also used, in an ordinary rifle, the ring without the projections to fit the grooves.

"It was also a part of the original invention (as may be found by reference to the report of the experiments made with my rifled gun at Fort Monroe in 1850, on file at the Ordnance Department), to attach the ring to the shot or shell by casting it upon it, having grooves made in the shell in such a way as to attach the ring and prevent its rotation on the shell, while still it was allowed to be driven forward upon it by the action of the powder.

"I am fully of opinion that all I have described originated in my invention, and desire to amend the specification so as to include the whole.

"Whether I may do this or not is, I suppose, a matter of discretion with yourself. Please advise me what may be done in the case.

"P. S.—Should you be unable to grant either of the emendations desired, please issue the patent immediately."

On January 4, 1862, the Patent Office replied as follows:

"In reply to your communication of the 31st ult., I have to say your patent will be ordered to issue in pursuance of your request. The defects in your specifications can only be cured by a reissue, as you will see by the accompanying rules."

On January 29, 1862, the Patent Office wrote said Woodbridge as follows:

"In the matter of your application for impt. in projectile for rifled ordnance, filed Feb. 11th, 1852, and passed for issue Mar. 25, 1852, you are informed in answer to your letter of Dec. 31, 1861, that, in the judgment of the office, the length of time you have allowed your invention to slumber is a bar to the grant of a patent at the present. For nearly ten years (contrary to sec. 34 of the printed rules) you have suffered your application to remain locked up within the secret archives of this office—not merely beyond the reach of the public but beyond even the cognizance of the examiners and other officers of this Department. In the meantime various patents embracing the same invention have been issued in England, and have for years been published in this country. The English patents of C. C. Minie, May 31, 1854, No. 1208; of A. E. L. C. Timmerhaus, No. 728 of 1855; and of A. V. Newton, No. 1381, of 1856 may be referred to as examples of a jamming or packing annular sabot on the rear of an ovoid projectile. The American patent of L. Houghton, Apl. 3, 1855, for the same device has for more than six years been before the public, and of this, at least, you were certainly bound to take notice if you wished to secure your protection. And yet the only reason assigned in your letter of Dec. 31 for this very unusual delay and prolonged silence is that you supposed the invention would not prove remunerative until recently. It is to the vigilant and not to the slumbering that the law extends its care; and in Simpson's appeal to the circuit court, D. C., it was held by Judge Dunlop that an application not renewed within two years after a previous application by the same party had been withdrawn must be considered in law as abandoned, even though the withdrawal was occasioned by the wrongful rejection of the office. (Decision made Apl. 9, 1861, and recorded in Book of Appeals No. 3, page 453.) On the doctrine of abandonment, as thus expounded, the office must refuse your claims; and this may be regarded as a second rejection of your application. By the 2d and 3d sections of the act of Mar. 2, 1861, you have the remedy of an appeal from the examiner's decision to the board of examiners-in-chief."

IV.

The reason of said Woodbridge for his delay in requesting issue of the patent allowed him was, as stated by him in communications to the Patent Office, that he thought that course best fitted to enable him to avail himself of the value of the patent, as by procuring delay in the issue of the patent the wants of the Government might demand the invention before the patent should expire, and that as the invention could be made available only by the necessities and action of the Government, he thought the intent of the law that the inventor should have 14 years' exclusive use of his invention could in no other way be so well attained in the case of this particular invention "as by deferring the issue of the patent to a time when it could be brought into practical use."

V.

On April 15, 1862, said Woodbridge entered an appeal to the Board of Examiners in Chief from the decision of the Examiner refusing the issue of a patent to him on his said application.

On July 10, 1862, the Board of Examiners in Chief affirmed the decision of the Examiner, of which fact the said Woodbridge was notified by Patent Office letter of July 15, 1862.

No appeal was taken from said decision of the Board of Examiners in Chief until January 7, 1871, when said Woodbridge appealed therefrom to the Commissioner of Patents. A hearing on the appeal was set by the Commissioner for February 14, 1871, notice of which was on January 19, 1871, erroneously mailed to said Woodbridge at Perth Amboy, N. J., an old address of his, and therefore did not reach him. A few weeks later, upon learning of this fact, he informed the Commissioner that the notice had not reached him. Thereupon another day was set for the hearing; but the Commissioner later found this date impracticable and promised Woodbridge that he would give him notice of another date for the hearing. No further action appears to have been taken in the matter, either by the Patent Office or by said Woodbridge until in January, 1879, when the Patent Office, by letter of January 13, in response to a recent request by Woodbridge, notified him that the hearing was set for January 23 following. The appeal was heard by the Commissioner on the 26 day set, and on February 13, 1879, the Commissioner affirmed the decision of the Board of Examiners in Chief refusing Woodbridge a patent, on the ground that his said application, in contemplation of law, had been abandoned by him.

On April 9, 1879, Woodbridge appealed from the Commissioner's decision to the Supreme Court of the District of Columbia, by which court the Commissioner's decision was, on February 28, 1880, affirmed.

VI.

The invention of Woodbridge covered by the amended and allowed claims of his said application was not in public use or on sale prior

to the date of the filing of said application in the Patent Office, nor was it in public use or on sale with his express consent and allowance as inventor thereof within the period from March 25, 1852, to December 31, 1861.

VII.

Before making his said application for patent the said Woodbridge had, in the year 1850, directly brought his said device to the attention of the United States War Department; and beginning on September 19 of that year trials or tests of projectiles equipped with the device were made on behalf of the United States at Fort Monroe, Va., by officers of the Ordnance Department of the Army, in conjunction with the said Woodbridge. In these tests a rifled gun was used, and all sabots tested on the projectiles were provided with projections on their exteriors corresponding with and fitting into the rifle grooves of the gun, as illustrated by Fig. 5 of the drawings of said application for patent, set forth in Finding I hereof.

Official reports on these tests were made by Colonel Huger and Major Mordecai, officers in charge of them, in November and December, 1850, as follows:

On November 5, 1850, Colonel Huger reported to the Ordnance Bureau as follows:

"In obedience to instructions received from your office, dated September 12th, I have furnished Dr. Woodbridge a target and means of trying his proposed shell fired from a rifled 6-pdr. gun. I have kept a record of the trials made and furnished Dr. Woodbridge with a copy of it for your information.

"It appears from the penetration of his shot that they have a greater force than the round shot of the same calibre. Having used up the shells he had on hand, I did not think it worth while to go to the expense of procuring more to perfect his plan of a percussion fuze, as I am satisfied, and I suppose it is generally conceded, that if the shell goes one end first it can be made to explode on striking. That this would be as advantageous as some suppose, I am not prepared to say.

"The plan of Dr. W. to increase the efficiency of projectiles by increasing their weight and diminishing the resistance of the air appears to me to be founded on correct principles, and will no doubt be an improvement if it can be rendered practicable in service."

On December 9, 1850, Major Mordecai reported as follows:

27 *Report on Dr. W. E. Woodbridge's Proposed Plan for Giving a Rifle Motion to Cannon Balls.*

"The plan under consideration consists essentially in attaching to the cannon ball a cylindrical cup or sabot, on the surface of which there are projections which fit into rifle grooves cut in the bore of the gun; the rifle motion thus given to the sabot is to be communicated to the ball by the adhesion of the former to the latter.

"Under the authority of the Secretary of War a 6-pdr. brass gun was prepared on this plan at the Washington Arsenal under the direction of Dr. Woodbridge. It has 32 grooves about 1/10 inch deep; the 'lands' are nearly of the same width as the grooves; the grooves have a twist of one turn in 40 feet. The sabots were made of a composition of lead and tin, cast in a mould grooved like the gun, but allowing sufficient windage for them to enter easily into the bore; length of sabot 3 in., weight 2½ lbs. The shot used in the trials were oblong (egg shaped) shells, of which the smaller end was lodged in the sabot; weight of shell about 7½ lbs.

"The only trial made with this gun in my presence was to fire three rounds for the purpose of ascertaining the practicability of loading and firing in the manner proposed. The charge for the 1st round was 6 oz-. of powder; the 2d, 12 ozs., and the 3d, 1 lb. The sabots were greased with tallow and the gun was carefully cleaned with a hair brush and also with a common sponge. With these precautions there seemed to be no difficulty in loading. After the 3d round there was observed to be a slight indention, or lodgement of the ball, on the lower side of the bore. I was apprehensive that this lodgement hight be increased by subsequent fires, so as to deform the grooves, and having no suitable place at this arsenal for erecting a target to ascertain the results of the trial, I recommended that the further trials should be made at some other post. The gun and apparatus were accordingly sent to Fort Monroe Arsenal, where further experiments were made in the presence of Col. Huger, which I did not witness, and the results of which have not been communicated to me.

"These results will be shown by Col. Huger's report, and my 'opinion of the merits of the invention' is found on the examination which I have made of it here. Before giving my opinion on the particular contrivance of Dr. Woodbridge, I will premise that, in view of the great improvements which have been recently made in the accuracy and effective range of small arms, by firing elongated balls from rifle barrels, I have for some time thought that it is to the application of the same principle to cannon that we are to look for a similar improvement in the accuracy and effect of their fire. This opinion seems to be borne out, in a remarkable manner, by the results of experiments made in Sweden with rifle cannon by Major Cavalli of the Sardinian artillery, as set forth in his 'Memoire sur les Canons se chargeant par la culasse,' lately published. This construction of the gun and ammunition would also lead immediately to the preparation of a shell which would explode in passing through a ship's side. But however great the advantages to be thus gained, I consider it indispensable for the military service that they should not be obtained at the sacrifice of that simplicity in the preparation and use of ammunition which is an essential condition for the easy
28 and rapid service of artillery, either in the field or in garrison, and this condition, I think, is not fulfilled by the arrangement proposed by Dr. Woodbridge. The metallic sabot has the great inconvenience of adding largely (nearly one-third) to the weight of ammunition for field service, which would render necessary a pro-

portionate reduction in the number of rounds to be transported by a given number of wagons and horses. In the service of heavy ordnance great inconvenience would raise from thus increasing the weight of the projectile, and I should consider it inadmissible unless accompanied by a corresponding increase in the capacity and momentum of the projectile. In the trials which I witnessed the sabot became separated from the ball at a short distance from the muzzle of the gun, but even if this should not generally be the case, I do not suppose that the sabot would become so connected with the ball as to accompany it always in long ranges.

"Another objection to the proposed plan is that in the rough handling to which shot are exposed in service these metallic sabots would almost inevitably be bruised and battered so as to prevent their insertion into the gun. Further, whatever may have been the result of the trials thus far made, I believe that in firing a very moderate number of rounds, the bore of even an iron gun grooved in the manner proposed would be so much injured as to prevent the insertion of the sabot; and even without such injury, I apprehend that the dirt deposited by the powder would not be so thoroughly removed in ordinary practice as not to form a serious obstacle to the service of the piece, which might be rendered useless for a considerable time by having such a sabot stuck fast in the bore. These evils would, I think, be much diminished by greatly reducing the number of grooves and increasing their width, but I apprehend that they would not be entirely obviated by this change alone.

"I may here remark that the principle of Dr. Woodbridge's method of giving a rifle motion to a cannon ball was suggested and perhaps tried some years ago in England, as will appear by the following extract from Greener on Gunnery, ed. 1846, p. 85. 'There is either now on trial, or shortly will be, a plan proposed by the late Joseph Manton of applying the principle of a rifle to artillery. His idea was, that if a motion on an axis, parallel to the horizon could be given to cannon balls, they would range further and with greater accuracy; but as there exists great difficulty in causing the rifling in a gun to act upon an iron ball, he constructed a cup of wood, into which the ball was fitted, projections were made upon the wood to fit into the grooves of the rifle, the spinning motion thus being communicated to the ball by its wooden adjunct. The result was twofold, for the expansions of the wood during the explosion filled the tube of the gun tight and effectually destroyed the windage. The Government of the day did offer him a premium of 1 farthing each; but 'Joe' overreached himself, asking the sum of £30,000 down; this they refused, and the patent was allowed to expire without the Government taking any advantage of it. However, this principle is now about to be revived again, and very probably ere this work is out of the press, we shall have startling announcements of improved practice, with a new shaped ball.'

"It would be interesting in this connection to know the result of these trials if they were made, and also of those that were to be
29 made last summer at Woolwich with Major Cavalli's breech-loading cannon, which, I presume, was also rifled.

"Although I do not regard Dr. Woodbridge's plan as applicable to the service in its proposed form, I think, as before remarked, that his efforts at improvement in ordnance are in the right direction, and I am therefore of opinion that the prosecution of them deserves reasonable aid from the Government, in the hope that something practically useful to the service may result from them. The continuance of the experiments to some extent need not be attended with much expense. A brass gun, such as was used in these first trials, is unsuited for any extended experiments, on account of the softness of the metal, and it was used only on account of its greater safety from accidental explosion. But Major Cavalli's experiments in Sweden have shown that a cast-iron gun may be very well used for such a purpose, and further trials might, therefore, be made at a moderate expense with a condemned 32-pdr., or with the experimental 24-pdr. which was made some years ago on the model of a 32-pdr. for trials of Mr. John Mason's shells, if that gun is still in existence."

On December 14, 1850, Colonel Huger reported to the Secretary of War as follows:

"In compliance with instructions from the War Department, dated December 3, requiring Major Mordecai and myself to report on a cannon offered by Mr. W. E. Woodbridge, I have the honor now to report:

"1st. That a statement of all the trials in my presence were, at the request of Dr. Woodbridge, forwarded through him to the Chief of Ordnance.

"2nd. That my opinion is that Dr. W. is searching in the proper direction to increase the accuracy and power of penetration of projectiles, viz, in giving them such form as to increase their weight and diminish the resistance to the air. To do this it is essential to give them a rotary motion around their longest axis—rifle motion. In the experiments with a 6-pdr. gun this motion was given by means of a metallic sabot, but no arrangements were made to adapt it for service, and I doubt if the ammunition could be conveniently arranged to render it suitable for field service, or if it would offer sufficient advantages to cause its adoption even if the ammunition could be so arranged.

"As regards its application to higher calibres, I have seen nothing to altar my opinion expressed to Dr. W., when he first explained to me his plans: 'That if he was prepared to carry on his experiments for five years at an annual expense of about fifty thousand dollars, we would probably at the end of that time be enabled to determine whether his plan was practicable and of sufficient value to cause its adoption.'

VIII.

After the filing of his said application for patent said Woodbridge, in or about December, 1852, caused to be printed and published under his name a pamphlet entitled "A Plan for Increasing the Efficiency of Cannon by Giving the Rifle Motion to Cannon Projectiles," which pamphlet contained the drawings and a full description of his said

device as it was disclosed by his said application for patent.
30 This pamphlet described the operation of the device and referred to and quoted from the said reports of the trials or tests of the device conducted at Fort Monroe by officers of the Ordnance Department in 1850, and described the alleged advantages of the device, but did not disclose the fact that a patent for said device had been applied for, or who was the inventor of the device.

Copies of said pamphlet were publicly distributed during the period between December, 1852, and December, 1861, and a copy thereof was placed in the file of Woodbridge's said application for patent.

Said pamphlet found a lodgment in public libraries, and was brought by said Woodbridge to the attention of Members of Congress and others likely to be interested in the promotion of the adoption of the device. Through this pamphlet said device was also disclosed to foreign countries in which said Woodbridge did not have or attempt to procure patent protection.

IX.

The following patents and publications related to the prior state of the art to which the said Woodbridge invention and application related

1. British patent to Wilkinson, No. 1,694, dated August 29, 1789.
2. British patent to Manton, No. 1,893, dated July 5, 1792.
3. French patent to Delvigne, No. 7,175, dated April 13, 1840.
4. Greener on "The Science of Gunnery," 1841, page 299.
5. An article by Holdstock on "Rifled Shot" in Mechanics Magazine for the year 1843, volume 39, pages 38 and 39.
6. An article on page 189 of the Artizan of 1846.
7. An article by Holdstock on gunnery in Mechanics Magazine for the year 1846, volume 44, pages 439 and 440.
8. French patent to Morel, No. 2,333, dated August 17, 1846.
9. French patent to Minié, No. 4,066, dated February 13, 1849.
10. The rejected application of Francis Mayer, filed March 12, 1851, for United States letters patent on "novel forms of shot."

Said patents and publications are by reference made a part of these findings of fact as exhibits A-1, A-2, A-3, A-4, A-5, A-6, A-7, A-8, A-9, and A-10, respectively.

As to the above French patents to Delvigne, Morel, and Minié, Exhibits A-3, A-8, and A-9, the dates of their issue and publication do not appear further than appears from the patents themselves. The rejected application of Francis Mayer, Exhibit A-10, filed in 1851, was cited by the Patent Office against the original claims of the Woodbridge application, as shown by Finding II.

X.

During the nine and one-half years intervening between the filing of Woodbridge's said application in the secret archives of the Patent Office and his request on December 31, 1861, for the issuance of a

patent thereon, a large number of improvements in projectiles was added to the art, among which were those disclosed by United States patents as follows:

31 1. Hotchkiss, No. 13679, October 16, 1855.
2. Sawyer, No. 13799, November 13, 1855.
3. James, No. 14315, February 26, 1856.
4. Read, No. 15999, October 28, 1856.
5. Cochran, No. 25951, November 1, 1859.
6. Cochran, No. 26016, November 8, 1859.
7. Cochran, No. 26337, December 6, 1859.
8. Hotchkiss, No. 29272, July 24, 1860.
9. Cochran, No. 30123, September 25, 1860.
10. James, reissue, No. 1098, December 11, 1860.
11. Hotchkiss, No. 32293, May 14, 1861.
12. Dahlgren, No. 32986, August 6, 1861.
13. Parrott, No. 33099, August 20, 1861.
14. Parrott, No. 33100, August 20, 1861.

Said patents are by reference made a part of these findings of fact as exhibits B-1, B-2, B-3, B-4, B-5, B-6, B-7, B-8, B-9, B-10, B-11, B-12, B-13, and B-14, respectively.

XI.

During the succeeding 10 years, from December 31, 1861, to said Woodbridge's appeal, on January 7, 1871, from the decision of the Board of Examiners in Chief, rendered on July 10, 1862, there were added to the projectile art the improvements disclosed by the following United States patents:

1. James, No. 34207, January 21, 1862.
2. James, reissue, No. 1275, February 11, 1862.
3. James, No. 34950, April 15, 1862.
4. Hubbell, No. 35825, July 8, 1862.
5. Sturtevant, No. 36116, August 5, 1862.
6. Sawyer, No. 36172, August 12, 1862.
7. Schenkl, No. 36576, September 30, 1862.
8. Mann, No. 37352, January 6, 1863.
9. Stafford, No. 37557, January 27, 1863.
10. Roberts, No. 37979, March 24, 1863.
11. Sawyer, No. 38699, May 26, 1863.
12. Dimick, No. 39216, July 14, 1863.
13. Arick, No. 39369, July 28, 1863.
14. Schenkl, No. 39682, August 25, 1863.
15. Absterdam, No. 41668, February 23, 1864.
16. Arick, No. 44061, September 6, 1864.
17. Henry, No. 45462, December 13, 1864.
18. Schenkl, No. 45951, January 17, 1865.
19. Arick, No. 47078, March 28, 1865.
20. Hotchkiss, No. 47725, May 16, 1865.
21. Dana, No. 50692, October 31, 1865.
22. Cochran, No. 56712, July 31, 1866.

Said patents are by reference made a part of these findings of fact as exhibits C-1, C-2, C-3, C-4, C-5, C-6, C-7, C-8, C-9, C-10, C-11, C-12, C-13, C-14, C-15, C-16, C-17, C-18, C-19, C-20, C-21, and C-22, respectively.

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XII.

During the period of time from the year 1861 to March 25, 1869, the United States used, in rifled cannon of the Army and Navy, large quantities of hard-metal projectiles of various types, having rifle rings, or sabots, and casings of softer metal.

Different types of these projectiles are shown and described by exhibits 1 to 12 set forth in the appendix to these findings of fact.

The weights of the projectiles of these different types shown by the evidence to have been so used by the United States during said period were as follows:

Dana (exhibit 1), 12,600 pounds.
Stafford (exhibit 2), 126,150 pounds.
Dyer (exhibit 3), 3,430.772 pounds.
Absterdam (exhibits 4 and 5), 931,904 pounds.
James (exhibit 6), 3,848.517 pounds.
Arick (exhibit 7), 47,000 pounds.
Hotchkiss (exhibit 8), 11,329.696 pounds.
Parrott (exhibit 9), 13,891.922 pounds.
Parrott (exhibit 10), 35,960,104 pounds.
Sawyer (exhibit 11), 524,240 pounds.
Dahlgren (exhibit 12), quantity not satisfactorily shown.

A reasonable royalty for use by the United States during said period of the said Woodbridge invention would be sixty-five hundredths of a cent per pound of the weight of projectiles upon which said invention was used.

XIII.

The said William E. Woodbridge was the first and original inventor of the improvements in ordnance projectiles for which letters patent were, on March 25, 1852, ordered to issue by the United States Patent Office, upon his said application of February 11, 1852; and he was at that time entitled to a patent therefor.

XIV.

It does not appear that any of the improvements or devices for which letters patent were so ordered to issue to the said William E. Woodbridge were manufactured or used by the United States as alleged by the plaintiffs' petition in this suit.

Conclusion of Law.

Upon the foregoing findings of fact the court decides, as a conclusion of law, that the plaintiff's petition should be, and it is hereby,

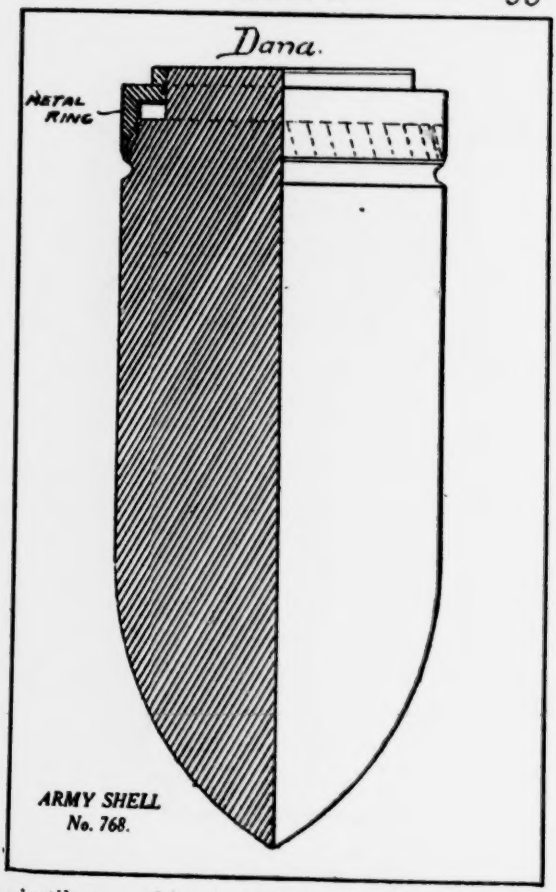
dismissed. Judgment is rendered in favor of the United States, against the plaintiff, for the cost of printing the record herein, the amount thereof to be entered by the chief clerk and collected by him according to law.

(Here follow Exhibits 1-12, inc., marked pages 33-44, inc.)

45 **Opinion.**

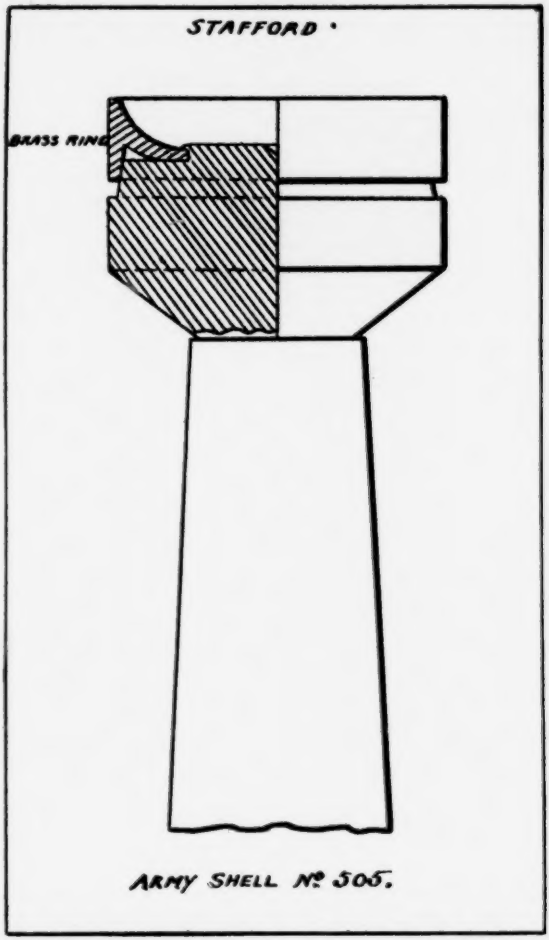
BOOTH, *Judge,* delivered the opinion of the court.

This case, in point of fact at least, is sui generis. The plaintiffs' decedent, William E. Woodbridge, on the 11th day of February, 1852, filed in the Patent Office an application for Letters Patent for a new and novel invention relating to projectiles for rifled cannon. On March 25th thereafter a patent was ordered to issue to said Woodbridge. On March 23, 1852, two days preceding the order to issue by the Commissioner, Woodbridge, in a written communication addressed to the Commissioner, requested, when the order to issue letters for his patent was made, that the same be filed in the secret archives of the patent Office, adding that if it was necessary to specify any special length of time, he would specify one year. On April 15, 1852, Woodbridge was duly notified that the order to issue had been duly made, and in compliance with his request the application had been duly filed in the secret archives of the office, subject to his direction and order as to time of issuing the patent. On December 31, 1861, 9 years, 8 months, and 16 days later, Woodbridge wrote to the then Commissioner of Patents requesting that the patent be issued on the application allowed March 25, 1852. This was admittedly the first and only effort made by Woodbridge during this long period of time to obtain his letters patent. Following this communication the Commissioner, on January 4, 1862, pursuant to Woodbridge's request that the patent be issued, informed him that it would be issued as requested; but subsequently, on January 29, 1862, revoked his previous order and declined the issuance of the requested letters on the ground of laches and abandonment. On April 15, 1862, Woodbridge appealed from this ruling of the Commissioner and lost said appeal on July 15, 1862, the Board of Examiners in Chief sustaining the Commissioner. On January 7, 1871, Woodbridge appealed to the then Commissioner of Patents in person, requesting a hearing. The Commissioner acceded to the request, but through some misadventure the hearing did not then take place. Woodbridge seems to have done nothing more until January 23, 1879, eight years thereafter, when he pressed for a hearing, which was granted, and on February 13, 1879, all former decisions were affirmed. Woodbridge then appealed, on April 9, 1879, from the decision of the Commissioner to the Supreme Court of the District of Columbia, where, on February 28, 1880, the decision was affirmed. Twenty-one or more years after this event the Congress passed the jurisdictional act hereinafter mentioned referring the case to this court for adjudication. The plaintiffs' petition



This projectile was of hard metal, having at its base a soft-metal ring, which surrounded a reduced portion of the projectile and extended forward over a tapering shoulder on the body of the projectile proper, the forwardly extending flange being also beveled or tapered. The action of the projectile when fired from a gun was that the powder gas drove the soft-metal ring forward onto the hard-metal body, the forward movement being limited by a square shoulder, and by wedging action expanded the soft metal. If fired from a rifled gun, the expansion of the soft-metal ring by wedging action caused it to fill the grooves of the rifling, thus giving rotary motion to the projectile, and, at the same time, closing the opening which would otherwise exist between the lands and grooves in the rifling, thereby cutting off the escape of gas, commonly called "windage." This projectile was a modification of the projectile shown by United [illegible] letters patent No. 50692, to Dana, dated October 31, 1865, [illegible] patent constitutes Exhibit C-91 to [illegible]

EXHIBIT 2.



This drawing illustrates the rear end of the Stafford projectile, which was a subcaliber projectile. This projectile had a hard-metal base, surrounded by a brass ring interlocked with the base of the projectile proper. The ring was concave at the rear end and projected beyond the hard metal of the projectile proper, and had a flange which tapered forward and surrounded a beveled shoulder on the rear of the hard metal of the projectile. When fired in a gun the forwardly projecting flange of the brass ring was expanded by wedging action caused by its sliding, within the limits allowed by the square shoulder, along the beveled base of the projectile, the rear concavity of the projectile being at the same time expanded outwardly by the direct action of the gas. This projectile was a modification of the projectile shown by United States patent No. 37557 to Stafford, dated January 27, 1863, which constitutes Exhibit C–9 to these findings.

EXHIBIT 3.

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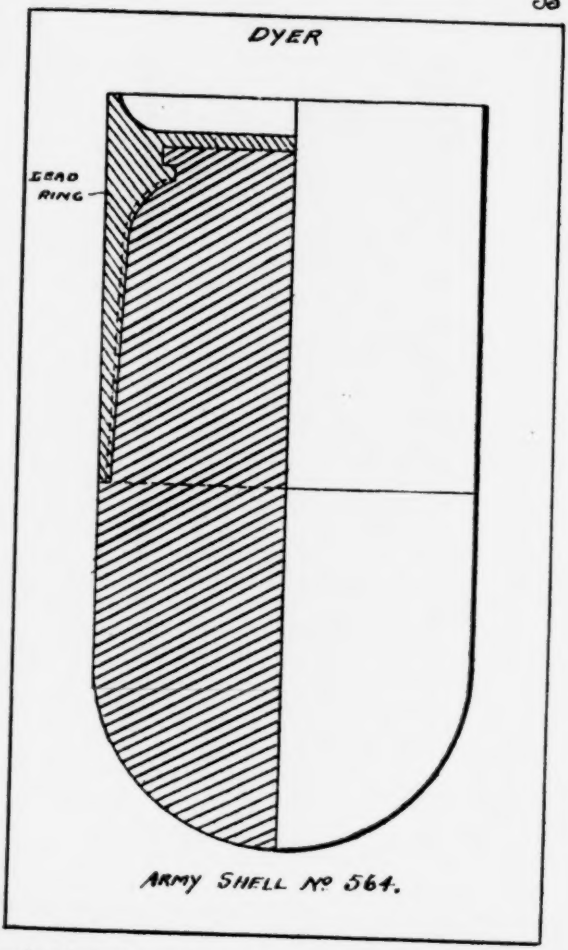
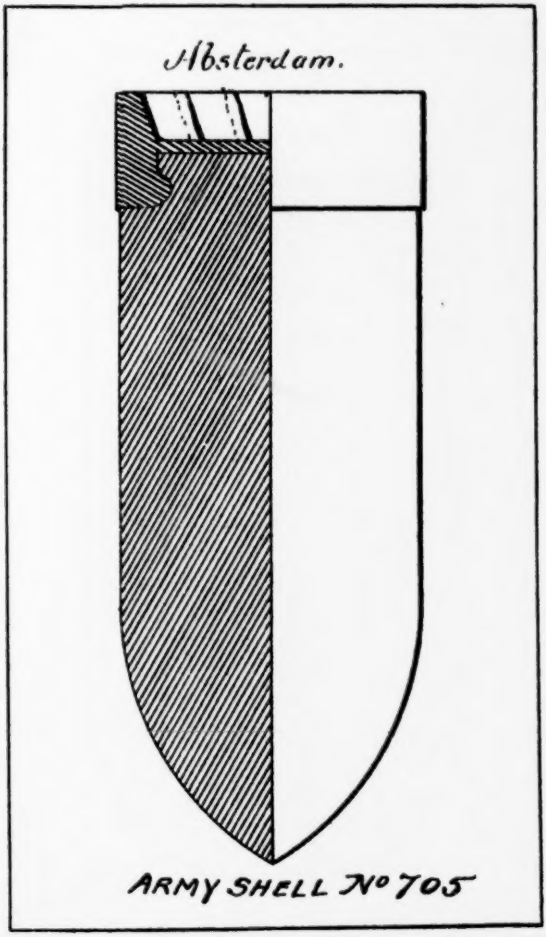


This projectile had a soft-metal cup in which the hard-metal base of the propectile body was inclosed and with which it was interlocked. The soft-metal cup had a flange projecting rearwardly, and when the projectile was fired from a gun the powder gas expanding inside of this rearwardly projecting flange forced the flange outward into the grooves, or rifles, of the gun. There was no wedging [illegible] of the soft metal unless it resulted from "upsetting" of the [illegible] metal along the rounded rear shoulder of the projectile proper.



This projectile was of hard metal with a cup-form sabot of soft metal surrounding a projection at the base of the projectile proper, and interlocking therewith. A flange of the soft-metal sabot extended to the rear of the projectile proper, the flange being diagonally slitted at intervals. When the gun was fired the explosion of the powder expanded this rear flange into the grooves, or rifles, of the gun, thus causing the projectile to follow the rifling, and also cutting off windage. There was no sliding or wedge action of the sabot, this being precluded by the form of the shoulders of the sabot and the projectile proper. This projectile was a modification of the projectile shown by United States letters patent No. 41668 to Abesterdam, dated February 23, 1864, which constitutes Exhibit C–15 to these findings of fact.

EXHIBIT 5.

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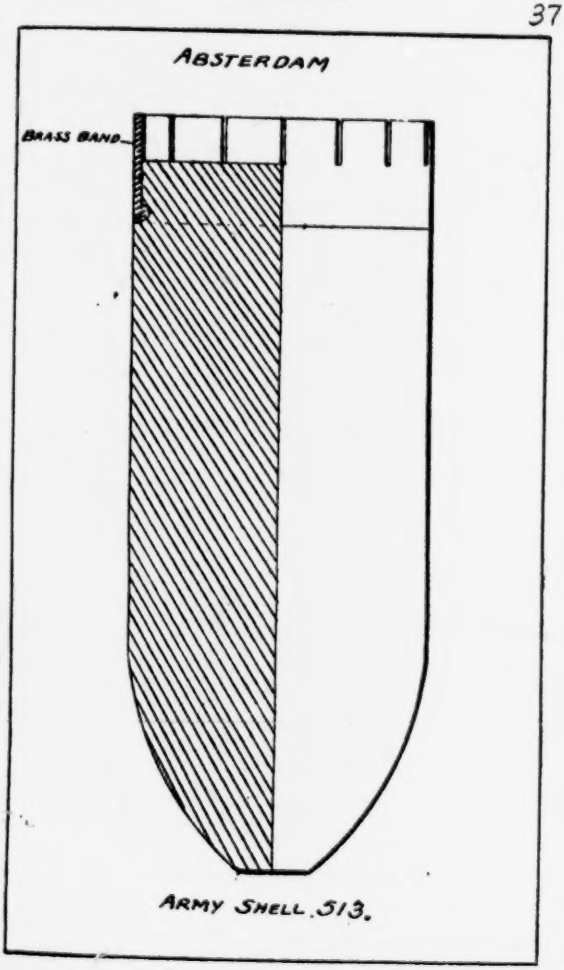
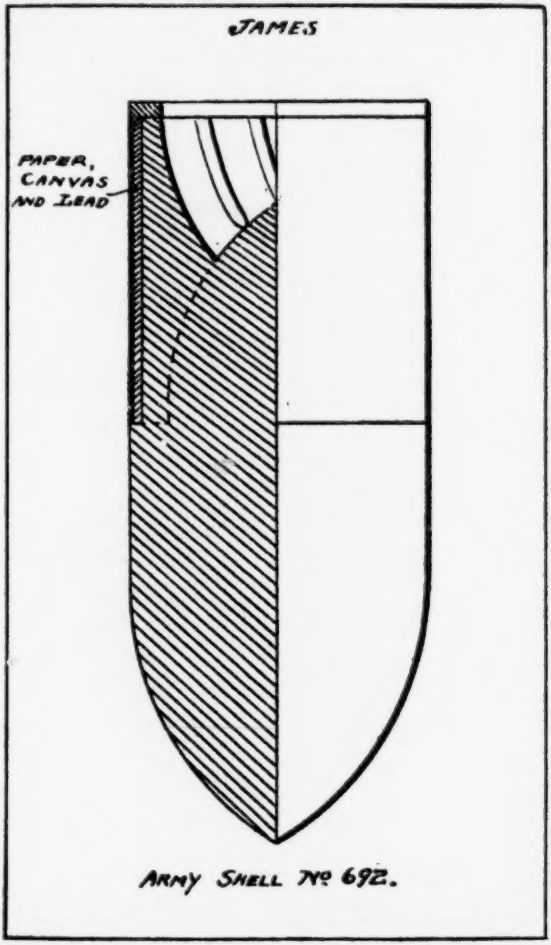
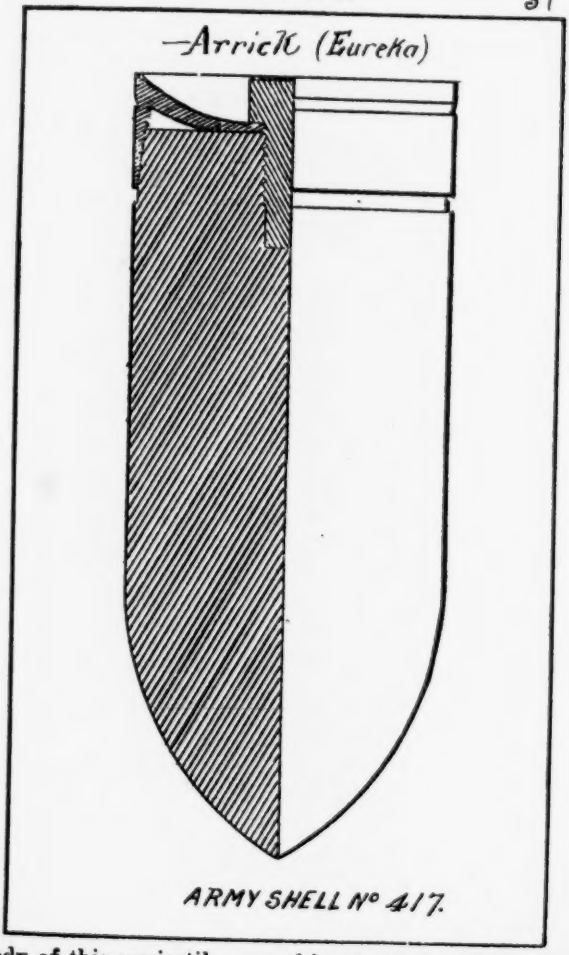


This projectile was of a hard-metal body, flat at the rear end, and slightly reduced in diameter for a short distance forward from the rear, with a shallow groove at the front of this reduced portion. A soft-metal band, marked "brass band" in the drawing, was compressed on the projectile around the reduced portion. This band, or ring, extended rearward beyond the end of the projectile, and was radially slitted in its projecting portion. Upon the firing of the gun the gas entered within the projecting portion of the ring and expanded it into the rifling of the gun. This projectile also was a modification of the projectile of the Absterdam patent No. 41668 of [illegible], constituting Exhibit C–15 to these findings.



The hard-metal body of this projectile had a cup at its base, the sides of the cup being formed of ribs or bars integral with the metal. Surrounding this cup and extending some distance forward of it on the body of the projectile proper there was a compound ring or band, composed in part of some soft metal, apaprently lead, and in part of canvas and paper. Upon the firing of the gun the powder gas entered the cup at the rear of the projectile and passed between the bars or ribs, thus entering between the soft-metal ring and the body of the projectile, expanding the ring outwardly against the walls of the gun, and into the grooves or rifles in the case of a rifled gun. This projectile was a modification, as regards the sabot feature of it, of the projectiles of patents to James, No. 34207, reissue No. 1275, and No. 34950, all of 1862, and constituting Exhibits C–1, C–2, and C–3 in these findings of fact.



The body of this projectile was of hard metal and had a reduced and tapering portion near the rear end. Surrounding this tapering portion there was a soft-metal beveled ring which was connected to a soft-metal concavo-convex bottom piece, forming nearly a cup, which was connected to the projectile by a hard-metal screw passing through the bottom of the cup, and into the end of the projectile proper. When the gun was fired the soft-metal ring was driven forward on the tapered end of the projectile and thereby expanded, and at the same time the concave portion of the cup was expanded outwardly by the powder gas. This projectile was a modification of the types of construction shown by patents to Arick No. 44061 of September 6, 1864, and No. 47078 of March 28, 1865, constituting Exhibits C-16 and C-19 to these findings.

EXHIBIT 8.

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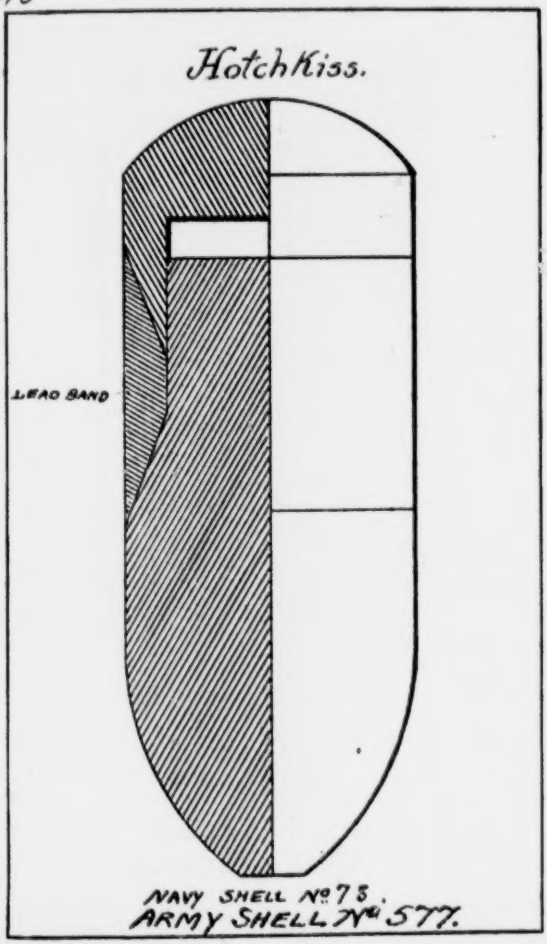
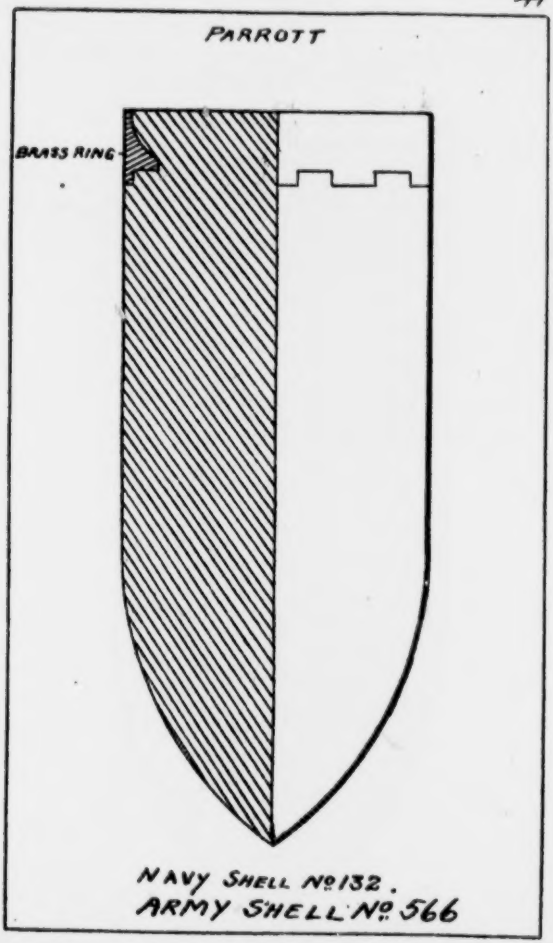


This projectile was made of two hard-metal parts with inclined surfaces telescoping together, upon discharge of the gun, in such manner as to wedge outwardly a band of soft metal encircling them at their juncture, so as to fill the bore and rifles of the gun, cutting off "windage" and causing the projectile to take the rifle motion. This projectile was of the type of construction shown by patents to Hotchkiss No. 13679 of October 16, 1855; No. 29272 of July 24, 1862; and No. 32293 of May 14, 1861, constituting, respectively, Exhibits B–1, B–8, and B–11 to these findings of fact, and No. 47725 of May 16, 1865, constituting Exhibit C–20 to these findings.

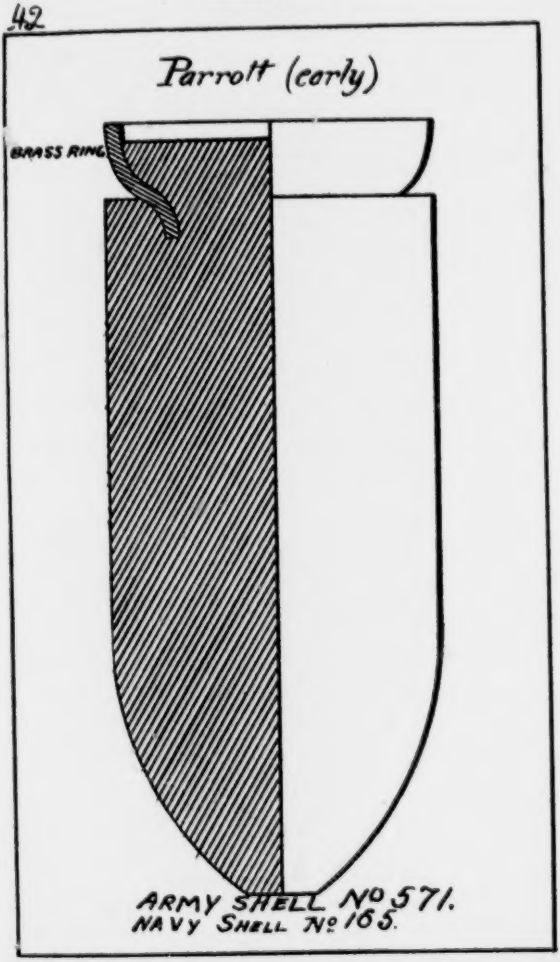
EXHIBIT 9.

41



The body proper of this projectile was of hard metal and was cut away at the rear portion, leaving an extension, or tailpiece, of less diameter than the main body and flaring outwardly in rounded contour. A brass ring was compressed into the annular depression thus resulting, the ring having fingers interdenting with fingers on the body of the projectile, in order to prevent separate rotation of the ring and the projectile. When the gun was fired the powder gas forced its way between the ring and the rear extension, or tailpiece, of the projectile and expanded the ring outwardly into the grooves, or rifles, of the gun. This type of construction is shown by patent to Parrott No. 33099, of August 20, 1861, which constitutes Exhibit B–13 to these findings.

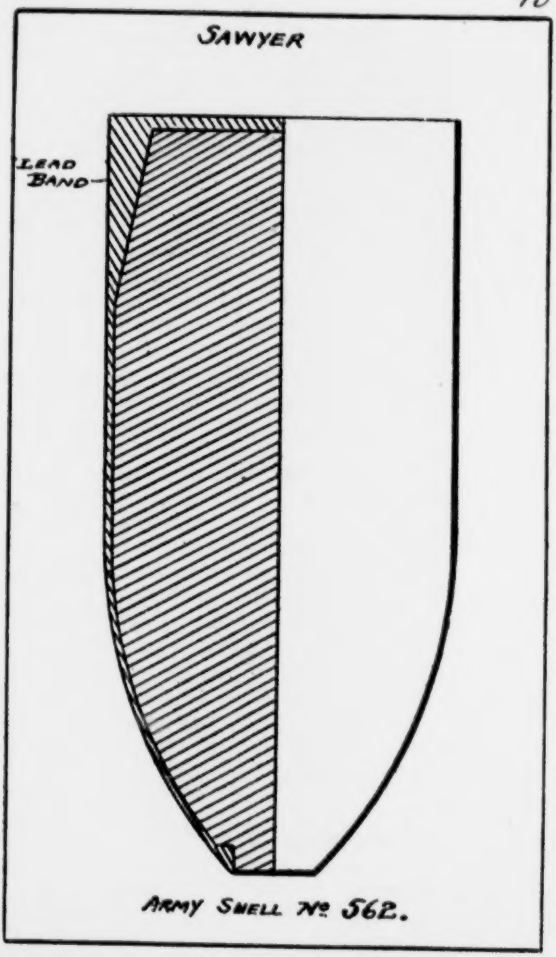
EXHIBIT 10.



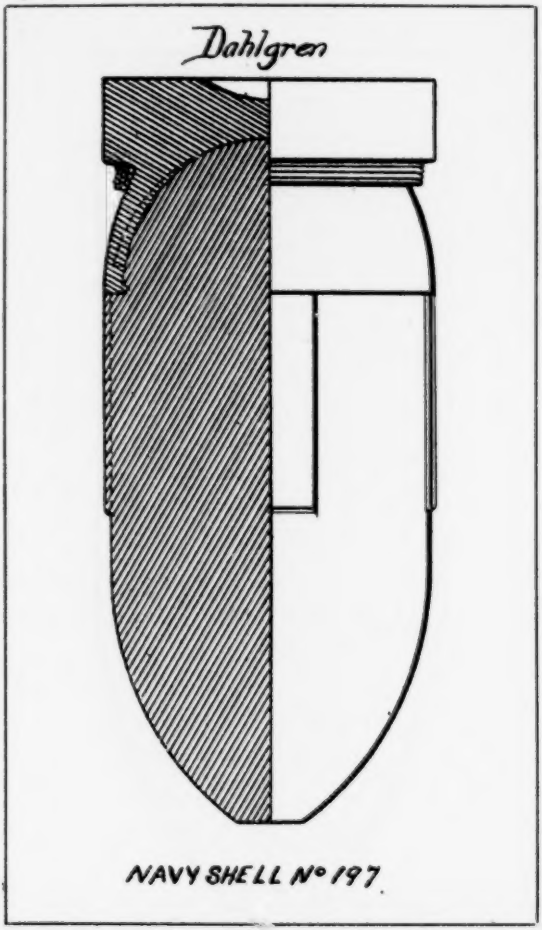
This projectile had a hard-metal body, with an annular groove in its base, extending forwardly and inwardly, the projectile in the rear of the groove being flared outwardly, but not to the full diameter of the body of the projectile. A brass or other soft-metal ring, nearly S-shaped in cross section, was forced into the groove in the rear of the projectile and fitted up against the extension of the projectile, forming a shallow cup at the rear. Upon the firing of the gun the gas of the explosion expanded this soft-metal ring, or cup, outwardly to close the "windage" and take the rifling of the gun. This form of construction was disclosed by patent to Parrott No. 33100 of August 20, 1861, constituting Exhibit B–14 to these findings.

EXHIBIT 11.

43



This projectile was of hard metal with a lead or other soft-metal covering enveloping practically the whole of the hard-metal body. The rear end of the hard-metal body tapered rearwardly, the soft-metal covering of this portion of the projectile being thickened increasingly toward the rear. When the gun was fired the soft metal surrounding the tapered rear portion of the hard-metal body was driven forward by upsetting upon itself and was expanded outwardly by reason of the tapered form of the portion of the hard-metal body surrounded by it. This projectile was of the type of construction shown by Patent to Sawyer No. 13799 of November 13, 1855, constituting Exhibit B–2 to these findings of fact.



The main body of this projectile was of hard metal, nearly egg-shaped, with longitudinal ribs on its outer surface. At the base of this body portion there were fingers extending in what might be called a radial direction. These fingers and the rear portion of the projectile proper were incased in a soft-metal cup which was compressed over the ends of the radial projections, or fingers, thus interlocking the soft-metal cup and the hard-metal body. The outer surface of the soft-metal cup was rounded rearwardly and inwardly, and then turned outwardly and continued in cylindrical form. The annular space around the outside of this cup was partly filled with lubricated cord. The rear end of the cup was somewhat concave in form. Upon the firing of the gun the soft-metal cup was upset and expanded outwardly, filling the bore and rifles of the gun. This projectile was of the type of construction shown by patent to Dahlgren, No. 32986, of August 6, 1861, constituting Exhibit B–12 to the findings of fact.

was filed March 7, 1901, and the first deposition in support thereof was not filed for more than five years thereafter, the plaintiffs making no effort to close their case until the year 1913, 12 years after the filing of the petition, and then absorbing an additional period of more than four years in filing briefs. The case was calendared by the court's own motion on January 7, 1918, and finally argued and submitted in April, 1918. Tentative findings were announced by the court in December, 1918, and we are now concluding the final stage of the litigation on the motions of both parties to amend the tentative findings. Thus, it is apparent that we are now considering a claim which had its origin over sixty years ago, and as to which we must first consider the defense of laches and abandonment.

46 Eliminating for the moment the whys and wherefores for this anomalous condition, it is perfectly obvious that such a period of procrastination, even subsequent to the passage of the jurisdictional act of March 2, 1901, in a case so decidedly featured by laches and delays, can not in a judicial forum escape the indubitable conclusion that either some great, positive and obvious wrong was imposed upon the inventor in ancient times, or some ex post facto event suddenly arising in the history of the country gave rise to a consciousness that a claimed invention thought to be valueless was by said event converted into one of value of sufficient proportions to revive its initiatory validity.

It must be conceded as an elementary principle of law that a claim thus circumscribed will be rigidly scanned by the courts, and the reasons advanced for a large money judgment against the defendants must of necessity be sufficiently cogent to overcome the handicap that appears from the sequence of events upon the face of the record, and which are not, and can not be, disputed. The explanation put forward to remove this disability must be clear, positive, and free from abiguity, and clearly attain the stage where, by the exercise of prudence and sound judgment, it would be convincing.

The jurisdictional act, 31 Stat. 1788, under which the court is proceeding, reads as follows:

"Be it enacted by the Senate and House of Representatives of the United States of America, in Congress assembled, That the claim of William E. Woodbridge for compensation for the use of his alleged invention relating to projectiles for rifled cannon, for which letters patent were ordered to issue March twenty-fifth, eighteen hundred and fifty-two, by the United States Government, be, and the same is hereby, referred to the Court of Claims of the United States, which court is hereby vested with jurisdiction in the premises, and whose duty it shall be to hear and determine, according to its usual rules of procedure—

"First. Whether the said Woodbridge was the original and first inventor of the said invention and entitled to a patent therefor.

"Second. To what extent the said invention has been used by the United States Government, and what amount of compensation, if any, the said Woodbridge ought to receive, in equity and justice,

from the United States Government for the past use of said inve
tion. And in considering and determining the compensation to
made, if any, the said court shall, if it find that the said Woo
bridge was the first and original inventor of said invention and e
titled to a patent at the time of its order to issue, namely, Marc
twenty-fifth, eighteen hundred and fifty-two, proceed and be guid
in all respects as though the aforesaid letters patent had been actuall
issued for the term of seventeen years from the date of the aforesa
order to issue; the court to render judgment, irrespective of lapse
time, in favor of the claimant with the same effect, including rig
of appeal, as judgments generally of said court: Provided, howeve
That the said court shall first be satisfied that the said Woodbrid
did not forfeit, or abandon his right to a patent, by publicatio
delay, laches, or otherwise; and that the said patent was wrongl
refused to be issued by the Patent Office."

The language of the jurisdictional act, and the fact of its enac
ment, warrants no intendment favorable to the claim.
47 makes no admission of liability and simply provides a foru
for a judicial ascertainment of the plaintiffs' rights. Unite
States v. Mille Lac Indians, 229 U. S., 498. The court will obser
its express mandates and proceed in harmony with its terms. Th
grant of jurisdiction from the terms of the act is sufficiently co
prehensive to cover the usual and ordinary contentions involved i
patent litigation.

The proviso to said act enjoins upon us a preliminary investig
tion. We are to be first satisfied that the plaintiff "did not forfeit
abandon his right to a patent, by publication delay, laches or othe
wise, and that the said patent was wrongly refused to be issued by th
Patent Office." This language is clear and free from ambiguity;
does not admit of strained construction, and in the light of the lo
history of events concerned in the proceedings taken with referen
to the patent, unmistakably indicates both a knowledge of the
events by Congress, as well as an intent to save the defense by pos
tive law. The provision is in effect a condition precedent to th
plaintiffs' right of recovery. It can serve no other purpose in th
context of the statute. A defense predicated upon abandonmen
forfeiture etc., would have been open to the defendants witho
this clause under the preceding terms of the law. When, howeve
Congress in a mandatory provision of the jurisdictional act enjoi
a positive condition precedent, a preliminary requirement whic
must be met before further substantive proceedings may go on,
is a legislative burden cast upon the plaintiffs to meet. We need n
cite authorities to sustain this principle.

Nor do we assent in toto to the ingenious analysis of this provis
by the plaintiffs' attorney. This is a patent case governed by paten
law, and obviously the court will confine its decision to adjudic
tions of the courts with respect to patent litigation, but the scope
the inquiry as to this issue is not limited to any such narrow cha
nels as contended for. The Congress knew that the plaintiff ha
applied for letters patent; that the application had been allowed an
deposited at plaintiffs' request in the secret archives of the Pate

Office. They knew also that no further proceedings had been had by the plaintiffs to obtain the letters until 1861, and they were cognizant of what took place thereafter; hence the very language of the law especially imposes upon the court the investigation of this particular status, in all its detail and legal effect, tending toward or establishing the question of abandonment, forfeiture, laches, and wrongful issue.

Taking up the history of the plaintiffs' case as it appears of record, it is first evident that Dr. Woodbridge was a very eminent inventor of his time; several patents duly issued attest his skill and learning, and therefore exclude any notion that he was in anywise ignorant of the essential proceedings to acquire a patent, or of its value afterward. In 1850 he brought forth the invention for the use of which by the defendants this suit is brought. The defendants, at the request of the inventor, in December, 1850, gave his invention an experimental trial. It can not be claimed, in view of the written report of the experimental trial made by two distinguished ordnance officers, that the inventor up to this time had accomplished more than a mere demonstration that he had conceived an idea which might ultimately develop into a useful and practical invention. As a matter
48 of fact Col. Huger, who had personally conducted the trial, pointedly observes that an expense of about two hundred and fifty thousand dollars would have to be incurred to bring the invention within the range of practical utility, requiring, in his judgment, five years of time to effectually demonstrate the fact. Dr. Woodbridge sensed the force of the report, for, according to his own statement, he thereafter made at least one, and possibly more than one, ineffectual effort to induce Congress to appropriate sufficient funds to enable a continuance of the experiments.

On February 11, 1852, he filed his application for a patent, the one in suit, and in March of the same year preferred his written request to the Commissioner that the application might be filed in the secret archives of the department, recognizing in the communication that the request so made was to be at his own risk, and limiting the secrecy to a period of one year. It is true that he qualified the time limit and also gave as a reason for the specific request his desire to obtain a patent in a foreign country. The order to issue the letters patent followed in March, and his application was, as he had requested, duly filed in the secret archives of the office.

In December, 1852, Dr. Woodbridge, the original inventor, published and circulated extensively both at home and abroad a pamphlet disclosing in detail the device covered by his application for the patent allowed in March, 1852; he quoted extensively from the reports of the experimental trial by the United States Government, and the pamphlet was received in public libraries, by Members of Congress and various other persons interested in this especial art, but nowhere in said pamphlet did he disclose that even an application for a patent of the device had been filed, either in this country or abroad, much less a secret order for its issue. As a matter of fact no attempt was ever made to secure a foreign patent.

Thus the matter rested for nine and one-half years without a

single intervening effort upon the part of the inventor to obtain his letters patent, or in anywise disclose to the public that he even contemplated the procurement of the legal monopoly of 14 years granted by the patent law. Woodbridge in his deposition states that in 1861, after the beginning of the Civil War, on a visit to the West Point Military Academy, in the interest of the adoption of his patent by the defendants, he learned for the first time that the defendants were really using his patent. The way in which he obtained this information was the similarity of the patent granted to Mr. Hotchkiss with his own, the defendants in fact using the Hotchkiss patent. The day of the month of this visit is not given, but we do know from the findings that on December 31, 1861, Dr. Woodbridge, for the first time since April, 1852, evinced an active interest in the final procurement of his letters patent, so long reposing in the hidden archives of the Patent Office. The decedent's letter of December 31, 1861, not only requests the issue of his letters patent in accord with the order to issue entered in 1852, but somewhat in detail seeks an emendation of his original specifications and claims in order to broaden and enlarge the same, so as to include features which were not included in the original application. On January 4, 1862, the Commissioner replied to his request, acceding thereto, but denying the right of emendation except as it might be accomplished by a reissue of letters patent. Twenty-five days later, however, on
49 January 29, 1862, upon a reconsideration of the decedents' request, it was denied in toto, and a positive refusal to issue the requested letters was entered by the Commissioner, accompanied by statements of the reasons therefor. The Commissioner pointed out to him the forfeiture and abandonment of his rights by prolonged delay and cited the rules of the department and an adjudicated case to sustain his ruling. In April following Dr. Woodbridge appealed to the Board of Examiners, which board sustained the Commissioner, and almost nine years later, viz: on January 7, 1871, Woodbridge prosecuted an appeal from the Board of Examiners to the Commissioner of Patents, the former ruling being again affirmed, whereupon he appealed to the Supreme Court of the District of Columbia, resulting in a final affirmance of the Commissioner's decision.

The reason advanced, and the only one of record, for this most unusual proceeding, is found in Finding IV. From it two motives are discernible. First. The patentee conceived the course followed as best adapted to attaching money value for the use of his patent. Second. The Government was his only customer, and then not an available one, until its future necessities might make it so. However much the reasons set forth in Finding IV fail to harmonize with those appearing in the letter of March 23, 1852, nevertheless, if there is nothing in this long course of procedure which followed that conflicts with the law, the plaintiffs are within their rights and entitled to what they claim.

We are by the contention urged confronted in the first instance with the legal proposition that a patentee may at his own request conceal the fact of an allowed order to issue a patent for the space

of nine and one-half years from the public and intervening inventors, the latter having in all respects complied with the patent law, and then at the moment when patented devices of such a character become of immense value, step in to the prejudice of a party who has had neither actual nor constructive notice of the existence of such a patent, for it must be remembered that between March, 1852, and December, 1861, fourteen inventions covering this identical art were passed to patent and letters granted. The mere statement of the proposition would seem to bring its own refutation. The plaintiffs are not in the position of suing for the use of the patent invented in 1852; their claim is founded upon the analogy of the 1852 patent to a long list of patents issued to various patentees during the period between 1852 and 1869, and for which compensation has been paid them by the defendants.

There is one principle of patent law established beyond peradventure—that is, that the monopoly granted by the patent laws was never intended for the exclusive profit or advantage of the patentee, but includes within its intent the benefits to the public at large as well as the stimulation and advancement of the useful arts and sciences, and while the patentee may be under no obligation to put his patented invention upon the market after he has secured his monopoly, he is burdened with the necessity of disclosing the fact of the existence of such patent through the processes prescribed by law, in the jurisdiction granted by Congress to the officials of the Patent Office. We have no such thing as a secret patent, much less a system of prescribed legality by which a patentee may defer the commencement of the period of monopoly by secreting his allowed application for a patent for a long term of years and thus indirectly prolong such period beyond the time fixed by law, by claiming monopoly from the date of the Letters Patent.

Section 8 of the act of July 4, 1836, 5 Stat., 121, provides, in part, as follows:

"And whenever the applicant shall request it, the patent shall take date from the time of the filing of the specification and drawings, not however exceeding six months prior to the actual issuing of the patent; and on like request, and the payment of the duty herein required, by any applicant, his specification and drawings shall be filed in the secret archives of the office until he shall furnish the model and the patent be issued, not exceeding the term of one year, the applicant being entitled to notice of interfering applications."

It is apparent that the terms of the foregoing statute do not authorize the secreting of applications for a patent indefinitely. The law was clearly intended to protect incomplete applications, to withhold them from publicity for a specified time to enable the applicant to perfect his application. It gave two substantial privileges; the patentee might claim patent rights antedating the date of the issue of his letters patent, six months, and he did not jeopardize his monopoly for a year after issue for failure to file a model, the law expressly authorizing the Commissioner to file his papers in the secret archives of the department, for at this time the law made the filing

of a model a condition precedent to the issuance of Letters Patent. The rights secured to patentees in the then state of the law were manifestly just. Many serious disadvantages might accrue to a patentee through an omission to comply strictly with the rules of procedure in the patent office, when he had in fact conceived a real invention, and the act of 1836 was evidently designed to enable a patentee to get his proper papers on file and comply with other necessary details at the later period of time stated in the act. The decedent never at any time brought himself within the provisions of the act of 1836. On the contrary, his application was completed and allowed, all fees paid and model on file at the very time he requested the filing of his papers in the secret archives of the department. He was not entitled under this statute, giving it the very broadest construction, to more than have his letters patent antedate the date of the issue of the same six months, i. e., from the date the application was filed instead of the date of actual issue of the letters patent. This he did not request, and what he did request was acceded to without any authority of law whatever. The counsel on both sides have exhausted the patent law in search of some authority for the act of the Commissioner and failed. It can not be cited. It is not a strained inference drawn from the letter of request written by the plaintiff to the Commissioner on March 23, 1852, and the Commissioner's reply of April 15, 1852, that the Commissioner believed he was acting under the act of 1836, for the letter of Dr. Woodbridge specified the term of one year as covering the length of time he wished to avail himself of the secret archives. Mr. Decker, an expert witness for the defendants, testifies that the model was filed February 13, 1852, and while this fact would seem to overthrow any surmise of want of knowledge of said fact on the Commissioner's part, nevertheless this seems the only reasonable hypothesis upon which the action could have been taken. We find no proof of the recog-
51 nition of a practice long indulged covering the facts in this case, and we are positively left to surmises and inferences as to how it happened to be allowed. Of one thing we think we are certain, and that is, such a practice finds no legal authority for its indulgence. At the very best the act of 1836 was a permissive statute, granting a limited privilege at the option of the patentee, entailing but one positive duty upon the Patent Office, and that was to notify the applicant of interfering applications, if any, within the year. It can not be enlarged into the grant of a substantive right of indefinite secrecy in behalf of patentees, or made the basis for the erection of secret archives in the Patent Office wherein inventions ready to pass to patent may be repose free of notice to the public and intervening inventors at the will of the inventor making such a request.

One contention vigorously asserted in behalf of the plaintiffs is that the Patent Office wrongfully refused to issue Woodbridge his letters patent on January 29, 1862. In order to attach wrong to the Commissioner's act we presume it must have been legally wrong. To arrive at a conclusion under this issue we must, if it is possible, ascertain the law governing the conduct of both parties to the transaction, and their relative position in relation thereto. There was

no legal authority upon which the Commissioner of Patents could rest his granting of the request to file the decedents' papers in the secret archives of the department, for in any event a longer term than one year, and a fortiori there was no legal right of the plaintiff to make such a request. Everyone is presumed to know the law, and while as between the two parties thus acting contrary to the law, rights of property might not be unduly jeopardized, the rights of third parties can not be affected to their great injury. Thus we are asked to say that a mutual mistake of law may be corrected nine and one-half years after it is made, in order that one of the parties thereto may acquire legal title to an invention which under the law he should have acquired at the time, and recover from a third party without notice a sum of money approximating a half million of dollars, for we must not overlook the fact that if the decedent was entitled to his letters patent in 1861 his right of action as for infringement or on an implied contract immediately obtained. There is no claim, and can be none, that the defendant in this case had any knowledge whatever of any patent rights upon the part of the plaintiffs herein when it used the devices it did use. Must it be sustained by citation of authorities that where a party avails himself of a limited legal privilege granted under an act of Congress, and then through his own neglect allows the limitation therein to lapse and continues for a long space of time in his negligent conduct, that he is not thereby precluded from availing himself of the privilege? The act of 1836 expressly warned the decedent that one year, and one year only, was the period of time within which he must assert his legal rights. There was the single duty cast upon the Commissioner, of warning him of intervening rights by way of interferences during the year; he did not have to summon him to a final assertion of his rights; Woodbridge must take care of himself, and inasmuch as he made absolutely no assertion of said rights until more than eight years after the expiration of the time limit, the right to so assert was lost, and with it goes the right of the Commissioner to act, even if he were so disposed, and this is giving the decedent the benefit of the very broadest construction allowable of the act of 1836. As a matter of fact, it is extremely doubtful in any event, if the Commissioner had any legal right to do what he did in 1852, or the plaintiff to prefer the request he did prefer at the time.

After days and days spent in a review of the long list of authorities cited in the briefs of counsel for both sides, we find in them no case which raises the issue as it is presented by the facts herein. The plaintiffs' attorneys, with manifest confidence, cite two cases as apropos, Smith v. Goodyear Dental Vulcanite Co., 93 U. S., 486, and Colgate v. Western Union Telegraph Co., 6 Fed. Cases, 85.

In the Smith case the inventor filed an application for a patent in February, 1856, and did not receive his letters patent until June 1864. The impediments in the way of his long delayed success were not placed there by any act of the inventor; on the contrary, he was protesting and protesting as vigorously as his limited financial resources would permit, that he had been unlawfully de-

prived of a patent. Three applications had been filed and rejected by the Patent Office. At every stage of the proceedings he was met with adverse rulings from the department, which he was unable to appeal from because of extreme poverty. The plaintiff never, at any time, withdrew his original application or applied for or accepted the fees he had paid. As the court very pointedly observed: "He did not withdraw his application. He did not ask for a return of part of the fee he had paid, nor by any act of his did he indicate acquiescence in the unfavorable action of the Patent Office * * * He appears never to have remitted his efforts until 1864 * * * The office practically acknowledged that the prior rejection had been an error." The case itself was a close one, three Justices dissenting. Contrasting it with the present controversy it seems to us as obviously distinct. The facts in the Smith case detail an acute controversy between the plaintiff and the Patent Office, one vigorously contending for the allowance of his application for a patent and protesting against its rejection, and the other holding adversely to his contention, until finally acknowledging previous error, seeks to right the wrong. Dr. Woodbridge had no difficulty with his application for the patent in suit in the Patent Office. No adverse rulings by the department halted his proceeding or in any manner thwarted his legal right to letters patent. He could have had them for the asking. Instead of completing the transaction, as he had an unobstructed right to do, and obtaining his letters patent, at his own request, he postpones doing what he should have done for a long period of years, during which time, so far as this record discloses, he was not restrained by either financial or other reasons, and then when in his judgment his invention becomes valuable, seeks to obtain letters patent, freely and easily obtainable almost a decade previous. In the Smith case there exists a public record unobscured by secrecy; in the Woodbridge case the papers were reposing in the secret archives of the department at the pleasure, to say the least, of the patentee. In the Smith case the plaintiff was continuously active; in the other, positively inactive until it became to his financial interest to act. There was nothing in the conduct of the inventor in the Smith case to indicate an intention to abandon his rights; certainly
53 nothing authorizing an inference to that effect in the face of the facts he offered in excuse for delay.

In Colgate v. Western Union Telegraph Co., supra, a case similar in most respects to the Smith case, we find little, if any, analogy with the present case. The conduct of Simpson, the original inventor in the Colgate case, as compared with the acts and conduct of the original inventor in this case, is emphatically the opposite. Simpson, between the years 1848 and 1853, bombarded the Patent Office from every angle of dispute and protest against the rejection of his application. At least 22 communications or actions of one kind and another emanated from him, either by letter or personal interviews. It is true he desisted in 1851, making one effort in 1853, because of poverty, or as the court puts it: "He might have taken an appeal from the decision of October, 1849, but the treat-

ment he had received from the Patent Office, afterwards acknowledge- by it to have been wrong and unjust, and the array of distinguished names and telegraphers presented by the office to discourage him, with statements showing how greatly the office relied on information received from them, might well have deterred him from entering, at the time, on a further contest." Thereafter, in 1858, he resumed the contest, and with commendable persistence and activity he maintained it until successful, the court finally sustaining his rights as against intervening inventions upon the ground of a wrongful and illegal ruling in the first rejection of his application which he had never withdrawn, notwithstanding he had applied for and received repayment of his fees. It was said in Adams v. Jones, Fed. cases No. 57, quoted with approval in the opinion of the court, that by the application filed in the Patent Office, the inventor makes a full disclosure of his invention, and gives public notice of his claim for a patent, and that the delay afterwards interposed by the mistakes or obtuseness of public officers where gross laches can not be imputed to the applicant, can not affect his rights.

We need indulge in no further comment as to the contrast between the Colgate case and the pending one, except to point out the very great contrast between the diligence of Simpson and Woodbridge subsequent to the refusal to grant the application made at the beginning of the first period of delay. From 1858 to 1867 Simpson continuously pressed his claims; he suffered no obstacle to deter him. In January, 1862, Woodbridge was notified of a refusal to issue his Letters Patent; in July following an appeal was taken to the board of examiners in chief; the decision of the commissioner was affirmed and Woodbridge notified on July 15, 1862. It was almost nine years thereafter, viz., January 7, 1871, before he appealed from the decision of said board, and it was not until the year 1879 that the appeal was brought to a hearing.

A careful examination of the long list of cases cited by the plaintiff's counsel, too many, indeed, to review in detail, forces the conclusion that they are all predicated, as were the two cases cited above, upon a wrongful and illegal ruling of the Patent Office upon the first application for patent, which was not thereafter withdrawn but followed by persistent protest, both to the department and the public against a manifest injustice, and in all of which appear that laches alone is relied upon as conclusive evidence of abandonment.

54 We do not wish to be understood as now asserting the doctrine that mere lapse of time is sufficient as a single factor in determining the question of abandonment. It is of course a fact, and a very potent one, in reaching the ultimate conclusion upon the subject. We have not approached the case from any such angle. But lapse of time, coupled with the incidents of the periods of delay, and the circumstances of the case in the light of the conduct of the one attempting to excuse it, make up the record from which the question of abandonment and forfeiture must rise.

The authorities sustain, without exception, the doctrine of abandonment in all cases where it is properly made out. Panning Machine Co. v. Keith, 101 U. S., 479, 485. "An inventor can not without cause hold his ap-lication pending during a long period of years, leaving the public uncertain whether he intends ever to prosecute it, and keeping the field of invention closed against other inventors. It is not unfair to him, after his application has been rejected, and after he has for many years taken no steps to reinstate it, to renew it, or to appeal, that it should be concluded he has acquiesced in the rejection and abandoned any intention of prosecuting his claim further."

While the decedent herein never suffered under the disability of a rejected application, can it be said that he is in a more fortunate position that one so handicapped, and relief will be extended to him in case of delay but denied to his less fortunate fellow inventor? He possessed and secured a substantive legal right; its full use and enjoyment was open to him without condition or restraint. The only act he needed to have done was complete his application by a request for his letters patent, which awaited him in the Patent Office. This he did not do, but, contrary to law, clothed his transaction in profound secrecy for nearly a decade, never disclosing to the public that he even contemplated a patent for his invention, nor making the slightest effort to assert his claims, until a sudden public emergency made valuable what during all these years was practically valueless. Certainly it can not be said that the spirit and intent of the patent laws will be advanced by allowing a patentee to conceal his invention for an indefinite time for his own profit and advantage, and then suddenly come forward, when future events make the device valuable, to the prejudice of intervening inventors and the defendants herein, who pursued their course in utter ignorance or notice of any rights or claim of rights upon the part of the lagging claimant. As said in Egbert v. Lippmann, 104 U. S., 333, 337, "It is fair to presume that having learned from this general use that there was some value in his invention, he attempted to resume, by his application, what by his acts he had clearly dedicated to the public."

Again, as well said in Kendall v. Winsor, 21 How., 322, "he may forfeit his rights as an inventor by a wilful or negligent postponement of his claims, or by an attempt to withhold the benefit of his improvement from the public until a similar or the same improvement should have been made and introduced by others. Whilst the remuneration of genius and useful ingenuity is a duty incumbent upon the public, the rights and welfare of the community must be fairly dealt with and effectually guarded. Considerations of individual emolument can never be permitted to operate to the injury of these."

The defendants have cited innumerable cases wherein the courts have not hesitated to interpose as between the diligent and
55 the negligent in patent cases, beginning with Kendall v. Winsor, supra, and extending through the whole line of cases to the more recent ones. It will serve no useful purpose to encumber this already too lengthy opinion with their citation or review. The doctrine of abandonment is too well established to be overthrown now, notwithstanding the peculiar features of this case.

The record discloses that Dr. Woodbridge voluntarily sought secrecy for his application for a patent, as well as the order to issue his letters patent; that he obtained said purpose, it being granted without authority of law; that thereafter for a space of nine and one-half years he made but one substantial effort to have his patent adopted and put in use; that said effort was futile, and thereafter no effort of any sort was made, no notice of any character given that he claimed or intended to claim a patent for the device he had previously applied for, until he discovered the fact that a somewhat similar device, for which another in the meantime had been granted a patent, was being used by the Government of the United States during the Civil War, whereupon he instituted the proceedings resulting in the present suit against the Government. We can not escape the conclusion, in view of these facts, that Woodbridge abandoned his right to letters patent. He admits in a positive statement that the course he pursued was entirely selfish, engaged in to delay the issuance of his patent until the wants of the Government might make it valuable before the date of expiration, clearly demonstrating that in his own mind at least he maintained a doubtful and inchoate purpose to perfect his patent only in the event it would be worth while to do so, and so long as that event failed to materialize, it might rest in secrecy, free from the scrutinizing research of other inventors, and unknown to those who might innocently trespass upon his hidden rights.

Much emphasis is given the public pamphlet voluntarily circulated by Woodbridge, wherein it is alleged he disclosed his invention. There are circumstances in patent contests in which such a publication becomes an important fact. Unfortunately for him, this is not one. How it can be pretended that a paper, such as is here disclosed, was sufficient in itself to give public notice, either that the person issuing it was the inventor of the device set forth or that he intended to apply for a patent therefor, or that he had so applied, is to us inexplicable. The attorney for the plaintiff asserts that any statement in the paper that Dr. Woodbridge was the inventor, or had applied for a patent, "was entirely uncalled for at this time," followed with the general observation 'that it was generally understood by the officials of the Government that he claimed to be the inventor of the invention or plan." What may or may not have been the general impression of the officials of the Government in 1852 can hardly be held to have descended in unbroken sequence to the officials of the Government in 1861. There is no positive proof that the identity of the officials remained the same, and we are at a loss to comprehend the legal force of a proposition that mulcts the defendants in a large money judgment, dependent upon general impressions, when a system of positive laws points out a precise method whereby positive notice of legal rights protects alike both the patentee and the user of his patented device. That the defendants never intended to wrong the plaintiff is obvious, and if they have wronged him, it must be so held on the doctrine of con-
56 structive rather than actual notice of his patent rights. The pamphlet did not clear the situation; it gave no notice of any

patent rights or intention to obtain the same. That the information there given was not available for public use nowhere appeared. Surely this is insufficient to sustain a patent.

We have not gone, and will not go at length into the details of the Woodbridge device and its supposed infringement by the Government in the use of the devices it did use, believing the case concluded upon what has heretofore been said. The court in this respect concludes, however, that the devices used by the Government did not infringe the plaintiffs' invention. The similarity between the devices is found in plaintiffs' claim number one. Reading said claim it is clearly apparent that the purpose for which the decedent employed the "extensible metallic ring or sabot" was in his own words "diminishing the windage and giving the ball its motion in the direction of the axis of the bore." He never conceived the idea that said ring or sabot of claim one could be used to communicate the rifle motion to a projectile, as evidenced by his second claim. The central idea of his conception was to communicate the rifle motion to a projectile in a rifle-bored gun, and to accomplish this purpose he specifies in his second claim the addition of projections to ring or sabot in combination with the rifle bore, the projections being the vital functioning element of his device to give rifle motion, the ring to prevent windage, etc. The inventor himself caught the force of this omission after he had seen the Hotchkiss guns in operation, for he sought to amend his claims in 1861, saying: "The principal idea of the invention was the application of an extensible ring of metal to a tapering part of a projectile in the rear of its greatest diameter, so that the ring might be made to enlarge its diameter by stretching under the action of the powder, at the same time clasping the ball, filling the bore of the gun and taking hold of the grooves." You will search the inventor's claims in vain to sustain the belated contentions thus put forward. What Dr. Woodbridge claimed as his invention in 1861 was not what he claimed in 1852, but was in reality the Hotchkiss idea he had gotten at West Point prior to preferring the amended claim, and which, if allowed, would have made Hotchkiss and the Government infringers.

Dr. Woodbridge was not a pioneer inventor in this particular art. On the contrary, the principles he embraced within his claims had been theretofore conceived, as fully attested by the emendation of his claims to meet the state of the prior art. Therefore his claims are not entitled to the broad construction insisted upon by him in 1861. He submitted without protest to the rulings of the Patent Office calling his attention to the state of the prior art, and refusing his original claims, as they then stood. The applicant willingly adopted the amendments suggested and thereby assented to their limitation; at least he made no effort until nine and one-half years later to enter a protest. The findings, we think, show that under the limited claims, granting arguendo their validity in every respect, the defendants did not use his device, and hence can not be under any legal obligation to respond in damages.

The petition will be dismissed. It is so ordered.

Graham, Judge, Hay, Judge, Downey, Judge, and Campbell, Chief Justice, concur.

57 **VI. Judgment of the Court.**

At a Court of Claims held in the City of Washington on the Twenty-second day of March, A. D. 1920, judgment was ordered to be entered as follows:

The Court, upon due consideration of the premises find in favor of the defendant, and do order, adjudge and decree that the claimants, as aforesaid, are not entitled to recover and shall not have and recover any sum in this action of and from the United States, and that the petition herein be and it hereby is dismissed: And it is further ordered, adjudged and decreed that the United States shall have and recover of and from the claimants, as aforesaid, the sum of Four Hundred and Ninety-two dollars and seventy cents ($492.7-), the cost of printing the record in this case in this court, to be collected by the clerk, as provided by law. By the Court.

VII. History of Proceedings After Entry of Judgment.

On May 20, 1920, the claimants filed a motion for a new trial and for amendment of findings of fact. This motion was overruled by the court on June 7, 1920.

58 **VIII. Claimants' Application for Appeal, Filed September 4, 1920, and Allowance of Appeal, Entered September 10, 1920.**

The above named plaintiffs, considering themselves aggrieved by the judgment and order made and entered on the 17th day of June, 1920, in the above entitled cause, do hereby appeal from said Judgment and order to the Supreme Court of the United States, and pray that this appeal be allowed and that a transcript of the pleadings in the case, the final judgment and order of the Court, the findings of facts by the Court, the conclusions of law of the Court, and the other proceedings and papers in the record herein upon which said judgment and order were based, duly authenticated, may be sent to the Supreme Court of the United States. H. P. Doolittle, Attorney of Record for Plaintiffs. Dated this 2nd day of Sept. 1920.

Filed in Court of Claims September 4, 1920.

The above was indorsed as follows: "The application for appeal is allowed." Edward K. Campbell, Chief Justice. Sept. 10, 1920.

59 Court of Claims.

No. 22504.

SAMUEL HOMER WOODBRIDGE and EDWARD WOODBRIDGE BARNES, Executors of William E. Woodbridge, Deceased,

vs.

THE UNITED STATES.

I, F. C. Kleinschmidt, Assistant Clerk Court of Claims, certify that the foregoing are true transcripts of the pleadings in the above-entitled cause; of the findings of fact and conclusion of law entered by the court; of the opinion of the court by Booth, J.; of the judgment of the court; of the claimants' application for and the allowance of an appeal to the Supreme Court of the United States.

In testimony whereof I have hereunto set my hand and affixed the seal of said Court at Washington City this Fourteenth day of September, A. D., 1920. F. C. Klinschmidt, Assistant Clerk Court of Claims. [Seal of Court of Claims.]

Endorsed on cover: File No. 28,968. Court of Claims. Term No. 418. Samuel Homer Woodbridge and Edward Woodbridge, Barnes, executors of William E. Woodbridge, deceased, appellants, vs. The United States. Filed June 6th, 1922. File No. 28,968.